

# **Program Analysis**

## **Chattanooga Multi-Sport Stadia**

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# Overview

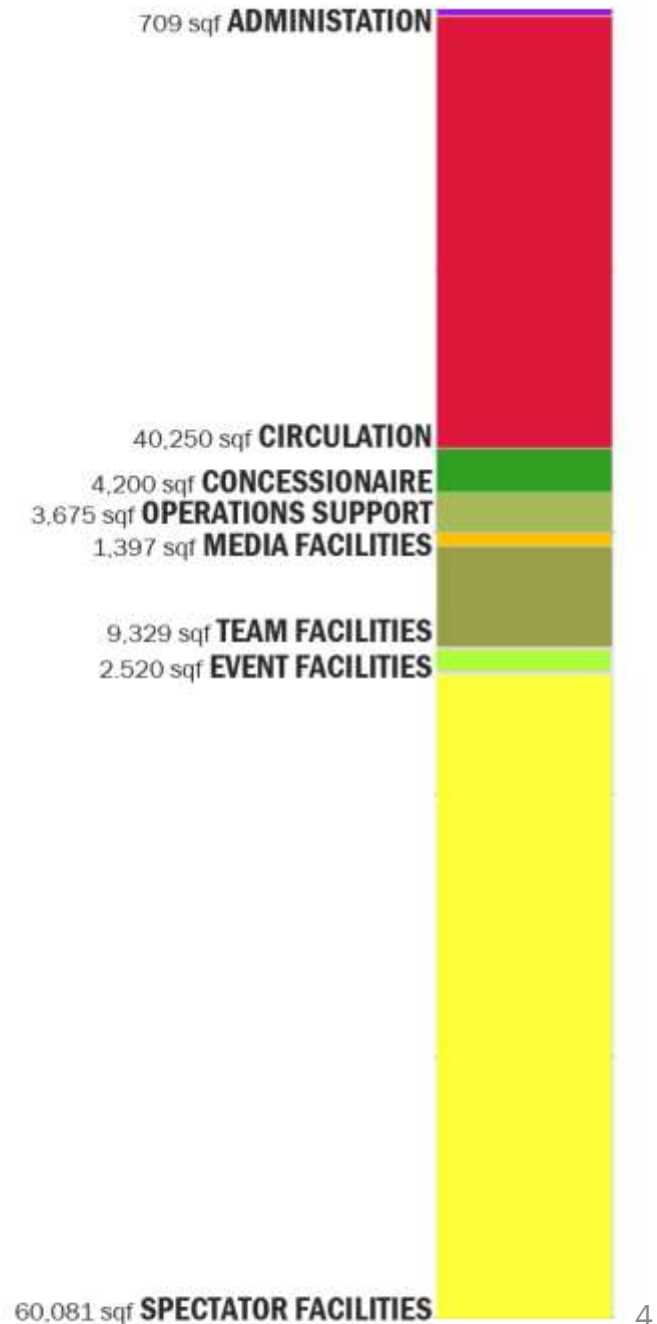
- This program is for a small Rugby/ Soccer/ Multipurpose stadium in Chattanooga, TN. The program requires an 8,000 seat facility, with possible expansion for an addition 4,000 seats.
- The proposed site is an existing park, located on the outskirts of downtown



# Summary

	NSF	5% Contingency
<b>Spectator Facilities</b>	61573	64561
<b>Event Facilities</b>	2,400	2520
<b>Team Facilities</b>	9,060	9513
<b>Media Facilities</b>	1,330	1397
<b>Operations Support</b>	3,500	3675
<b>Concessionaire Facilities</b>	4,000	4200
<b>Circulation</b>	40,250	40250
<b>Administration</b>	675	709
<b>Total Net</b>	122,788	128,927

Circulation and seating bowl do not have 5% contingency added



# Spectator Facilities

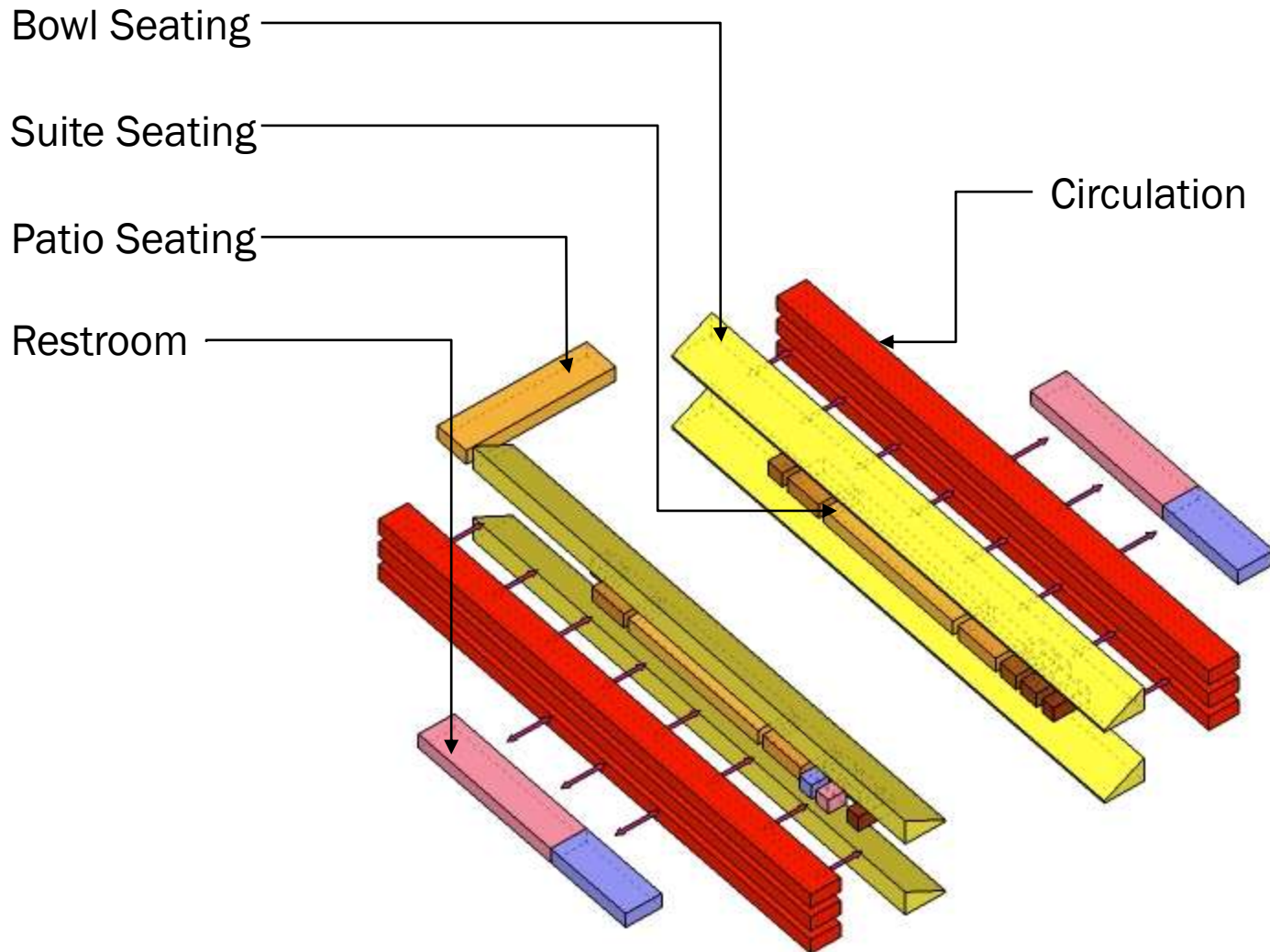
250 sqf **Security Room**  
 250 sqf **Guest Services/First Aid**  
 480 sqf **Suiteholder Restrooms**  
 1,800 sqf **Suites**

8,300 sqf **Public Restrooms**

	Phase 1			Phase 2	
	Units	SF/Unit	NSF	Units	NSF
<b>Spectator Seating</b>	<b>8014</b>		<b>50543.2</b>		
a. Seating Bowl (19" min seat width)	6910	6	41460	4000	24,000
b. Club Seating (21" min seat width)	800	6.5	5200		
c. Suite Seating (22" min seat width)	120	10.3	1236		
d. Party Suite Seating	24	10.3	247.2		
e. Patio Seating	160	15	2400		
<b>Public Restrooms</b>			<b>8,300</b>		
a. Men's Toilets (15w.c., 29 Urn., 22lav.)	64	50	3000	25	1750
b. Women's Toilets (85 w.c., 29 lav.)	85	50	5300	46	2650
<b>Suites</b>			<b>1800</b>		
a. Luxury Suites	10	150	1500		
b. Party Suites	1	300	300		
c. Hallway/Elevator Lobby					
<b>Suiteholder Restrooms</b>			<b>480</b>		
a. Men's Toilets (2 w.c., 2 Urn., 3 lav.)	4	60	240		
b. Women's Toilets (4w.c., 3 lav.)	4	60	240		
<b>Guest Services/ First Aid</b>			<b>250</b>		
a. First Aid Station	1	250	250		
<b>Security Office</b>			<b>200</b>		
Video Surveillance and Fire Command Center	1	200	200		
<b>Total Net</b>			<b>61,573</b>		<b>28400</b>

50,543 sqf **Seating Bowl**

# Spectator Facilities- space diagram



## Seating Bowl

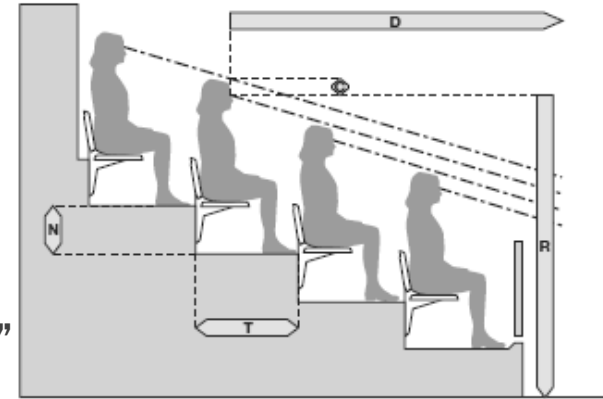
Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Low	Public Restrooms, Pitch Concession stands

### Requirements:

- 8,000 seats, potential of 2<sup>nd</sup> phase to add 4,000 seats to the seating bowl.
- 19" Minimum Seat Width
- Seating rake max: 34 degrees
- Optimal rise height between rows: 18"

- Optimal row width: 30"-32"
- Max row length: 22 seats
- For 10,000 seat stadium 10-15 rows in a tier is ideal
- Should be separated from wall and or height change
- More information in glossary under seating bowl

**T= 30"-32"**  
**N= 18"**



(Stadia, 133)

## Club Seating

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Low	Public Restrooms, Pitch Concession stands

### Requirements:

- 800 Seats required
- Should have optimal view angle and located near midfield
- 21" Minimum Seat Width
- More information in glossary under seating facilities

## Suite Seating

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ Suite	Low	medium	Suite Restrooms, Pitch

### Requirements:

- 120 Seats Required or 12 per suite
- 22" Minimum Seat Width
- Should only be accessed through the luxury suite
- Diagrams of typical layout available in glossary under suite.



## Party Suite Seating

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Medium	Suite Restrooms, Pitch

### Requirements:

- 24 Seats for one party suite
- 22" minimum seat width
- Should only be accessed through party suite

## Patio Seating

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
High	Public w/ ticket	Low	Low	Public Restrooms, Field Concession stands, seating bowl

### Requirements:

- 2400 SQF
- Seating for 160
- Provide tables and chairs that have view to playing field
- Open accessible to all guests, but ticket can be sold as general admission or standing room

## Public Restrooms

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Public w/ ticket	Low	High	Concourse, Seating Bowl, Club Seating

### Requirements:

- Phase 1
  - Men's: 3000 SQF
    - 15 w.c., 29 Urn., 22 lav.
  - Women's: 5300SQF
    - 85 w.c., 29 lav.
- Phase 2
  - Men's: 1750 SQF
    - 9 w.c., 16 Urn., 10 lav.
  - Women's: 2650 SQF
    - 46 w.c., 29 lav.
- Priority should be given to multiple small restrooms as opposed to few large restrooms
- Optimally no seat should be 200 ft from a restroom, preferably on the same level (Stadia, 179)
- Sample restroom layout are provided in the glossary under restroom



## Luxury Suites

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
Medium	Public w/ Suite	Low	Medium	Suite, Restrooms, Field, Suite Lobby, Suite Seating

**Requirements:**

- 10 Suites are required at 150 SQF each
- Non-concentrated seating, cocktail tables, lounge furniture, ect.
- food and drink service area
- Should have private access separate from main concourse
- Provide access to private restrooms
- Provide direct access to luxury suite area of seating bowl
- Typical layout in glossary under suite

## Party Suites

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
Medium	Public w/ Suite	Low	Medium	Suite, Restrooms, Field, Suite Lobby, Party Suite Seating

**Requirements:**

- 1 Suites are required at 300 SQF
- Non-concentrated seating, cocktail tables, lounge furniture, ect.
- food and drink service area
- Should have private access separate from main concourse
- Provide access to private restrooms
- Provide direct access to party suite area of seating bowl
- Larger than typical suite but similar in layout to typical suite layouts

## Suite Lobby

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
High	Public w/ Suite	Low	Low	Suite Restrooms, Party Suites, Luxury Suites

**Requirements:**

- No required program square footage
- In the case suites are located in multiple separate areas
- Should give suite patrons exclusive access to suite areas

## Suite Holder Restrooms

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
Low	Public w/ Suite	Low	High	Party Suites, Luxury Suites

### Requirements:

- Men's: 240 SQF
  - 2 w.c., 2 Urn., 3 lav.
- Women's: 240 SQF
  - 4 w.c., 3 lav.
- Potential for single person restroom (typical layout in glossary under restroom)
- If suites are located in separate areas of the stadiums, program numbers should be split between the areas.

## Guest Services/First Aid

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
medium	Public	Low	High	Seating Bowl, Public Restroom, Security Room

### Requirements:

- 250 SQF
- Program maybe split to offer service at multiple locations
- Stretchers are commonly 75" x 22"
- Widths for stretchers and wheelchairs are 36" for doors & 48" for corridors
- Should be located near exterior for ambulance access
- An ambulance access road should be at least 20' wide.
- Optimally provide semi private space for at least two patients as well waiting area for guest
- Well ventilated and well lighted space
- More design considerations and (typical layout in glossary under first aid)

## Security Room/Fire Command

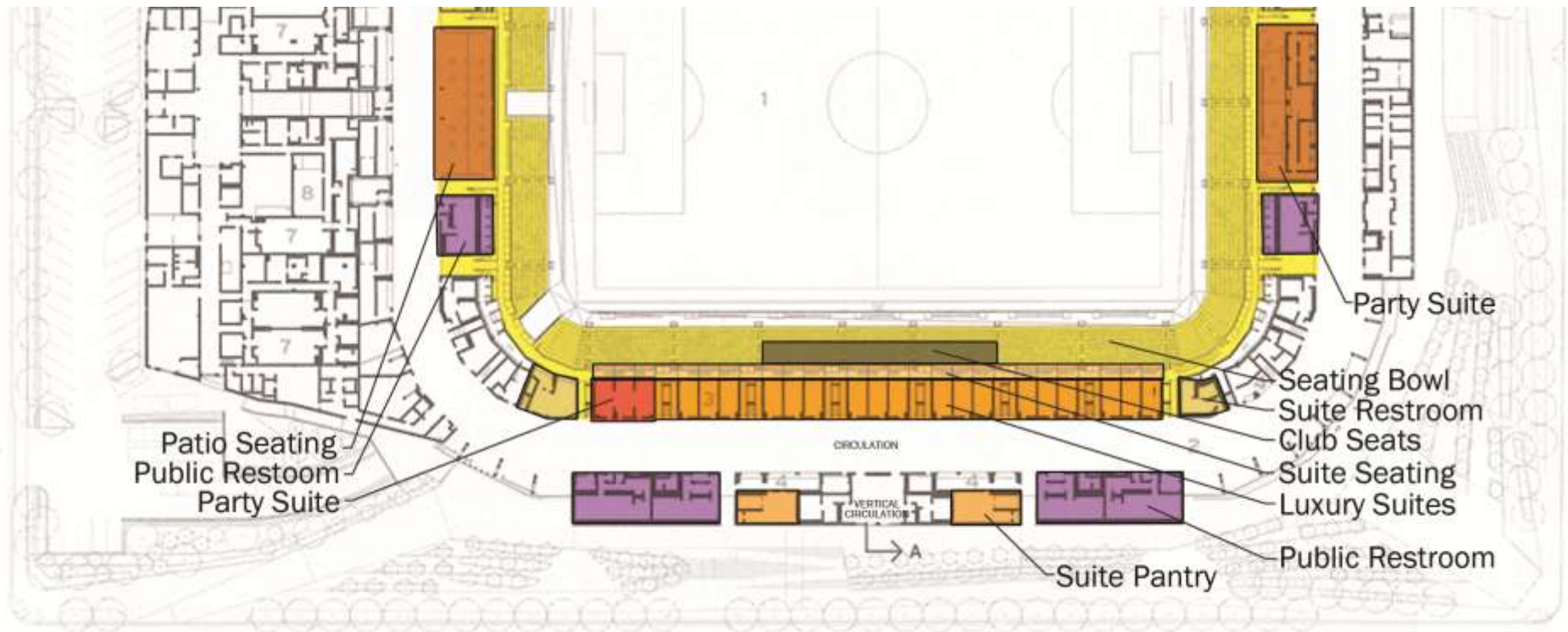
Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
medium	Private	medium	High	Security Office, Guest Services/First Aid

### Requirements:

- 200 SQF
- Area for security camera monitor

## Spectator Facilities Case Study

- This stadium has a seating bowl that surrounds the perimeter of the playing field. The club seats are placed at midfield to provide optimal viewing. Patio seating is placed on the ends where visibility is lower. Suites have direct access off main concourse, which is not ideal but saves on the extra space required for private access. Suite pantries are placed behind public concession stands. Restrooms are located both on the inside and outside of the concourse.



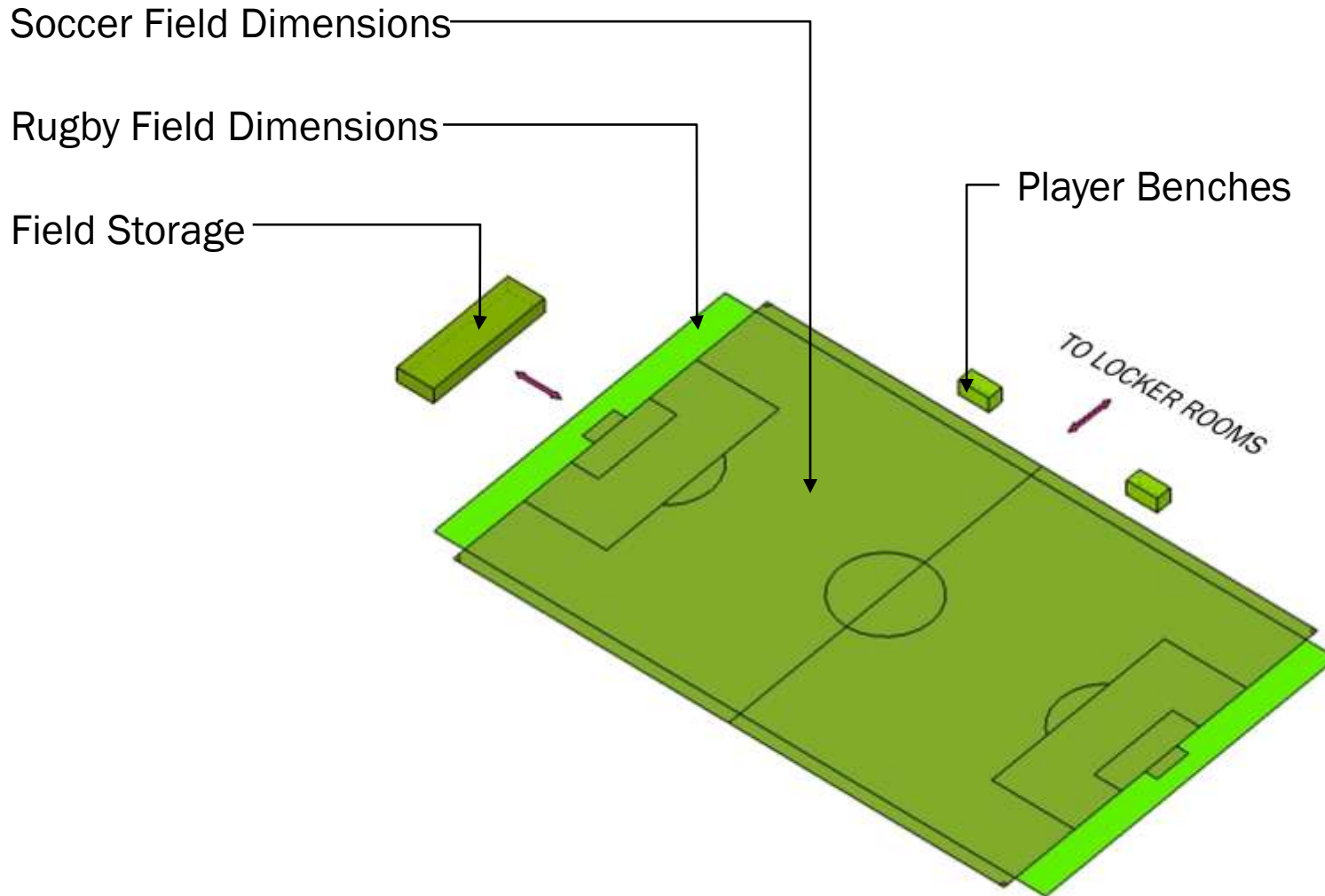
# Event Facilities

	Units	SF/Unit	NSF
<b>Field</b>			<b>2000</b>
a. Pitch Configuration	1	107333	Not Included
b. Field Storage	1	2000	2000
c. Stage			
<b>Off Field</b>			<b>400</b>
a. Player Benches	2	200	400
<b>Total Net</b>			<b>2,400</b>

2000 sqf **Field**  
(does not include playing surface)

400 sqf **Player Benches**

# Event Facilities- space diagram

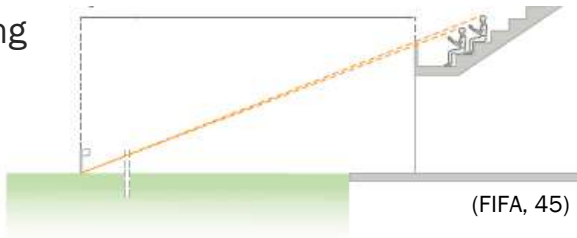


# Pitch Configuration

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
High	Private	Low	low	Seating Bowl, Locker Rooms Field Storage

## Requirements:

- No defined program size
  - Soccer Field: 120 yards x 75 yards
  - Rugby Field: 124 yards x 75 yards
  - Diagram of fields in glossary under pitch configuration
- Field should 20' to 28' from seating bowl, larger diagram available in glossary under pitch configuration



# Field Storage

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	low	High	Field

## Requirements:

- 2000 SQF
- Lockable Storage with field access to hold equipment when not in use, soccer goals, rugby goalpost, on field seating (potentially for events that are able to take advantage of field for seating).

# Player Benches

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
High	Private	Low	low	Seating Bowl, Locker Rooms Field Storage

## Requirements:

- Two player benches that seat up to 22 players
  - Benches should be on same side of field, with close access to locker room
- Typical bench layout requires 32' long bench (diagrams in glossary under benches)
  - Provide protection from audience (see benches in glossary for illustration)
  - 32'should be between the two benches

# Stage

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	low	High	Field

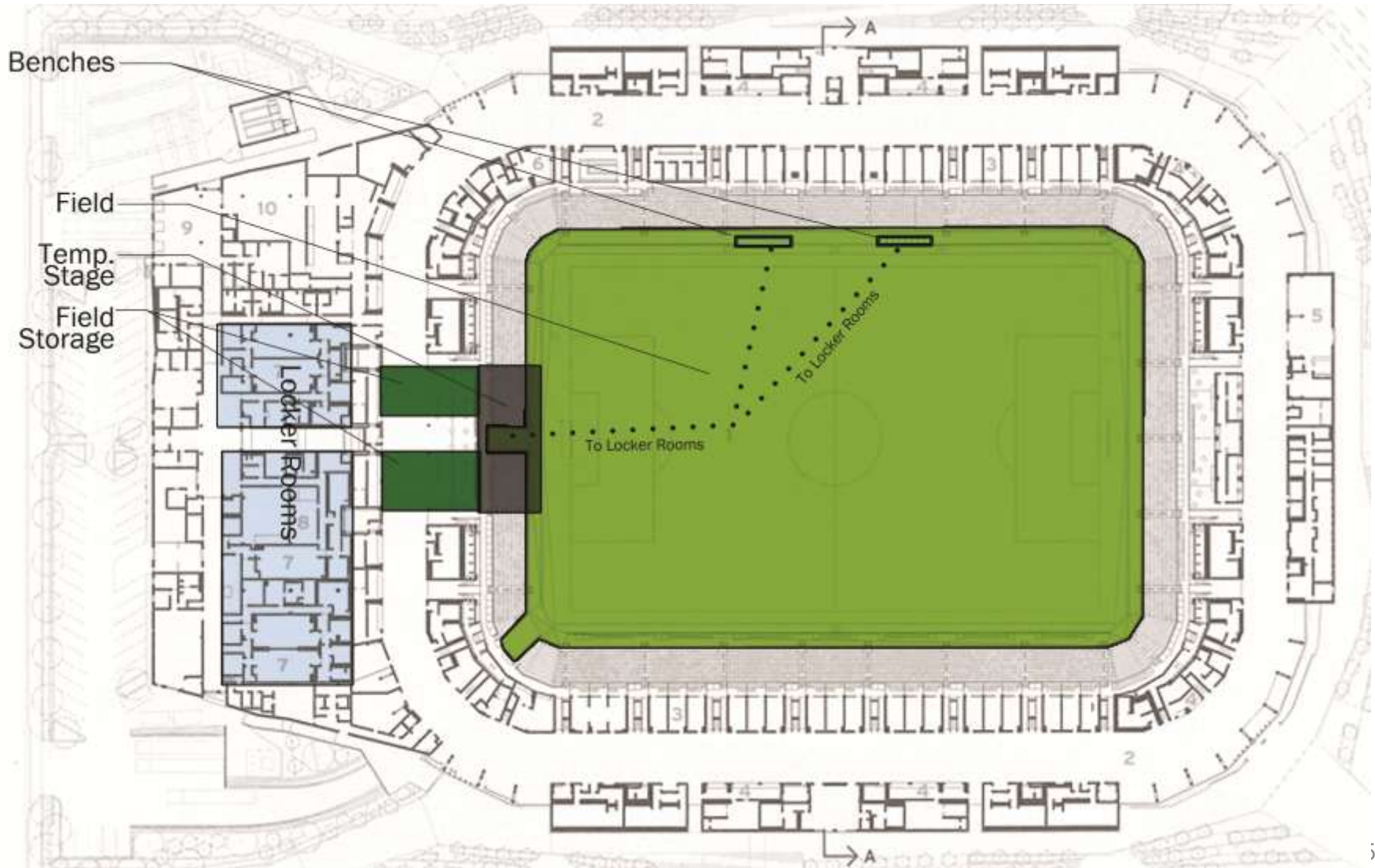
## Requirements:

- Temporary stage of about 100' x 50' Stage to be used for certain events



## Event Facilities Case Study

- Some talk





# Team Facilities

	Units	SF/Unit	NSF
<b>Pro Rugby Team Locker 1</b>			<b>1675</b>
a. Locker Room (24) 30" Lockers	1	600	600
b. (6) Showers + (4) W.C.	1	500	500
c. Grooming Area with (4) lavs and cont. mirror	1	200	200
d. Head Coach Office	1	200	200
e. Coaching Staff & Staff Locker Room (8) 24" Lockers	1	100	100
f. Coache's Toilet	1	75	75
<b>Training Suite (Shared with Pro Soccer)</b>			<b>2195</b>
a. Trainer's Office	1	120	120
b. Treatment Room / Hydrotherapy	1	600	600
c. Training Storage	1	75	75
d. Team Equipment Workroom / Laundry	1	100	100
e. Equipment Storage	1	300	300
f. Circulation	1	400	400
b. Player Lounge	1	600	600
<b>Pro Soccer Team Locker 2</b>			<b>2240</b>
a. Locker Room (24) 30" Lockers	1	600	600
b. (6) Showers + (4) W.C.	1	500	500
c. Grooming Area with (4) lavs and cont. mirror	1	200	200
d. Head Coach Office	1	150	150
e. Coaches Offices	2	120	240
f. Coaches Shower, (1) wc, (1) ur, (2) lav, (2) shower	2	200	400
g. Coaches Locker Room (4) 30" Locker	1	150	150
<b>Team Rooms (Shared with Pro Rugby)</b>			<b>600</b>
a. Team Meeting Room/Multi-purpose	1	400	400
b. Equiptment Manager /Work Room / Storage	1	200	200
<b>Auxiliary/Visitor Lockers</b>			<b>1900</b>
a. Locker Room (24) 30" Lockers	2	600	1200
b. (4) Showers, (2) W.C., (3) Lavs with mirror	2	350	700
<b>Officials Lockers</b>			<b>450</b>
a. (6) hooks plus streching area	2	100	200
b. (1) shower, (1) W.C., (2) lavs	2	125	250
<b>Total Net</b>			<b>9,060</b>

450 sqf **Auxiliary/Visitor Locker**

450 sqf **Official Locker Room**

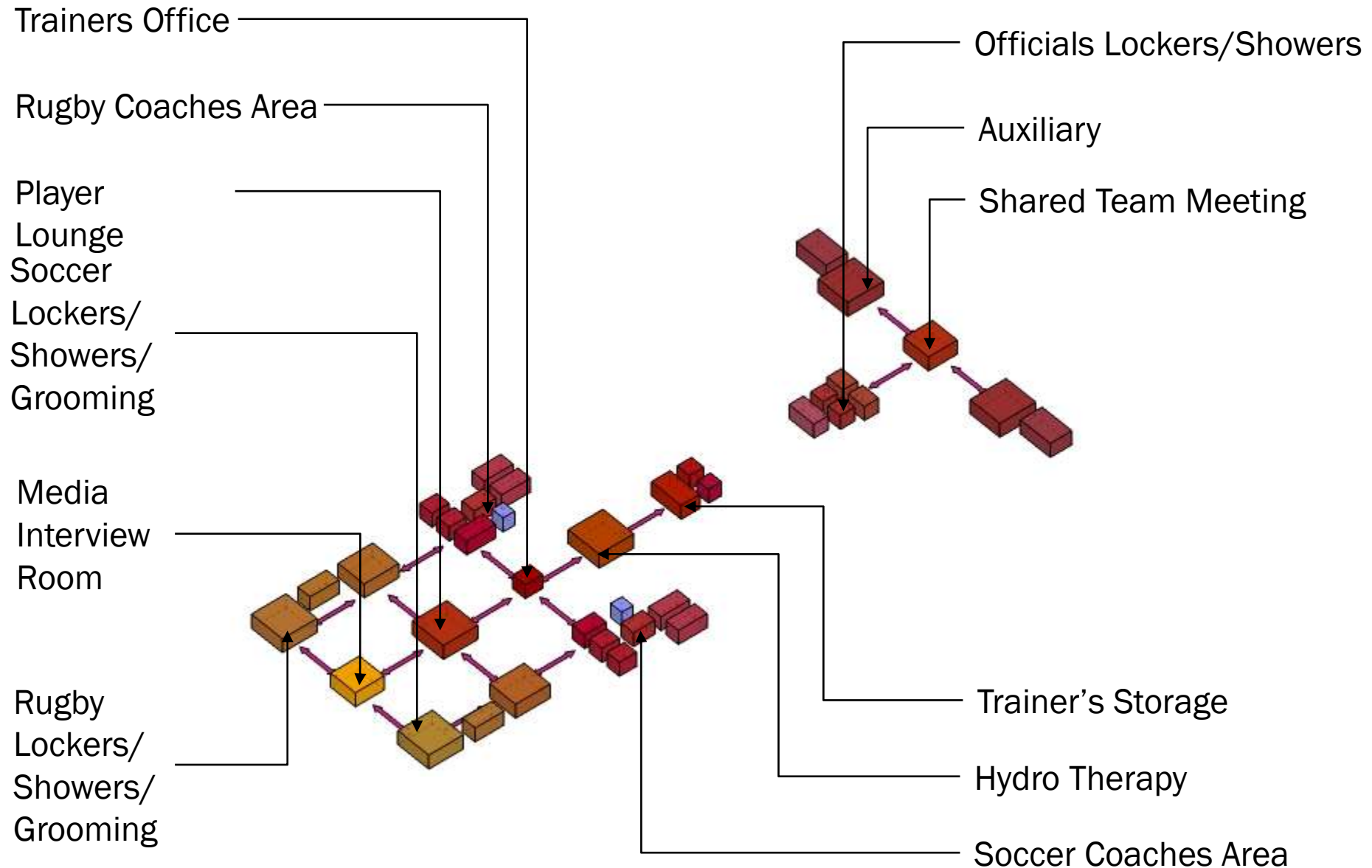
600 sqf **Team Rooms**

2,240 sqf **Soccer Team Locker Room**

2,195 sqf **Training Suite**

1,675 sqf **Rugby Team Locker Room**

# Team Facilities- space diagram



# Pro Rugby Locker Room

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	private	medium	high	Field, Training, Suite, Team Room

## Requirements:

- Private Access to player parking and field
- Good Ventilation
- A: Locker Room (24) 30" Lockers
  - Provide bench seating for 24
  - Space for tactical demonstration board
- B. (6) Showers + (4) W.C.
  - Showers should be separate by door or air lock for moisture control
- C. Grooming Area with (4) lavs and cont. mirror
- D. Head Coach Office
  - Adjacent to player locker room
- E. Coaching Staff & Staff Locker Room (8) 24"Lockers
- F. Coaches' Toilet
  - Single Use Toilet, see page ??

# Training Suite

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
medium	Private	High	High	Pro Locker Rooms, Team Rooms

## Requirements:

- a. Trainer's Office
  - Single office approx. 10'x12'
- b. Treatment Room / Hydrotherapy
  - Should Contain:
    - [Massage tables](#) 84"L X 30"W
    - [Soaking tubs](#) 48"L x 20"W
    - Workout Area w/ various weight machines, treadmills, bikes, ect.
  - Training Storage
    - Contains fitness equipment when not in use, weights, jump ropes, ect.
- d. Team Equipment Workroom / Laundry
  - Should contain 1 each washer / dryers units aprox. 30"W x 28"D ([ipso.com](#))
  - Locate near equipt., manager office
- e. Equipment Storage
  - Should located near equipment manager office
- f. Circulation
- b. Player Lounge
  - Non concentrated seating, sofas, chairs area for television viewing

# Pro Soccer Locker Room

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	Low	Low	Field, Training, Suite, Team Room

## Requirements:

- Private Access to player parking and field
- Good Ventilation
- A: Locker Room (24) 30" Lockers
  - Provide bench seating for 24
  - Space for tactical demonstration board
- B. (6) Showers + (4) W.C.
  - Showers should be separate by door or air lock for moisture control
  - See shower in glossary for more information
- C. Grooming Area with (4) lavs and cont. mirror
- D. Head Coach Office
  - Adjacent to the Player Lockers
  - Typical office layouts in glossary under office
- E. Coaches Offices
  - 2 small offices for assistant coaches
- F. Coaches Shower, (1) wc, (1) ur, (2) lav, (2) shower
  - 2 Separate facilities adjacent to coaches' office
- G. Coaches Locker Room (4) 30"Locker
- See locker room in glossary for more information

# Team Rooms

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
medium	Private	medium	medium	Pro Locker Rooms. Training Room

## Requirements:

- To be shared by pro soccer team and pro rugby team so must be centrally located between
- a. Team Meeting Room/Multi-purpose
  - Class room style room with tables and chairs for team
  - Should have video capabilities as well as demonstration board (white board/chalk board)
- b. Equipment Manager /WorkRoom/ Storage
  - Should contain desk, repair area, and storage area for equipment
  - Should have close proximity to equipment storage room

# Auxiliary/Visitor Lockers

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	low	High	Field

## Requirements:

- To be used for visiting teams or for other events that will take place at the site
- Should have good ventilation
- a. Locker Room (24) 30" Lockers
  - Should have bench seating for 24
  - Space for tactical demonstration board
- b. (4) Showers, (2) W.C., (3) lavs with mirror
  - Showered should separated for moisture controls
- Shower stalls should be semi private with stall enclosure see shower in glossary for more information on size requirements

# Officials Lockers

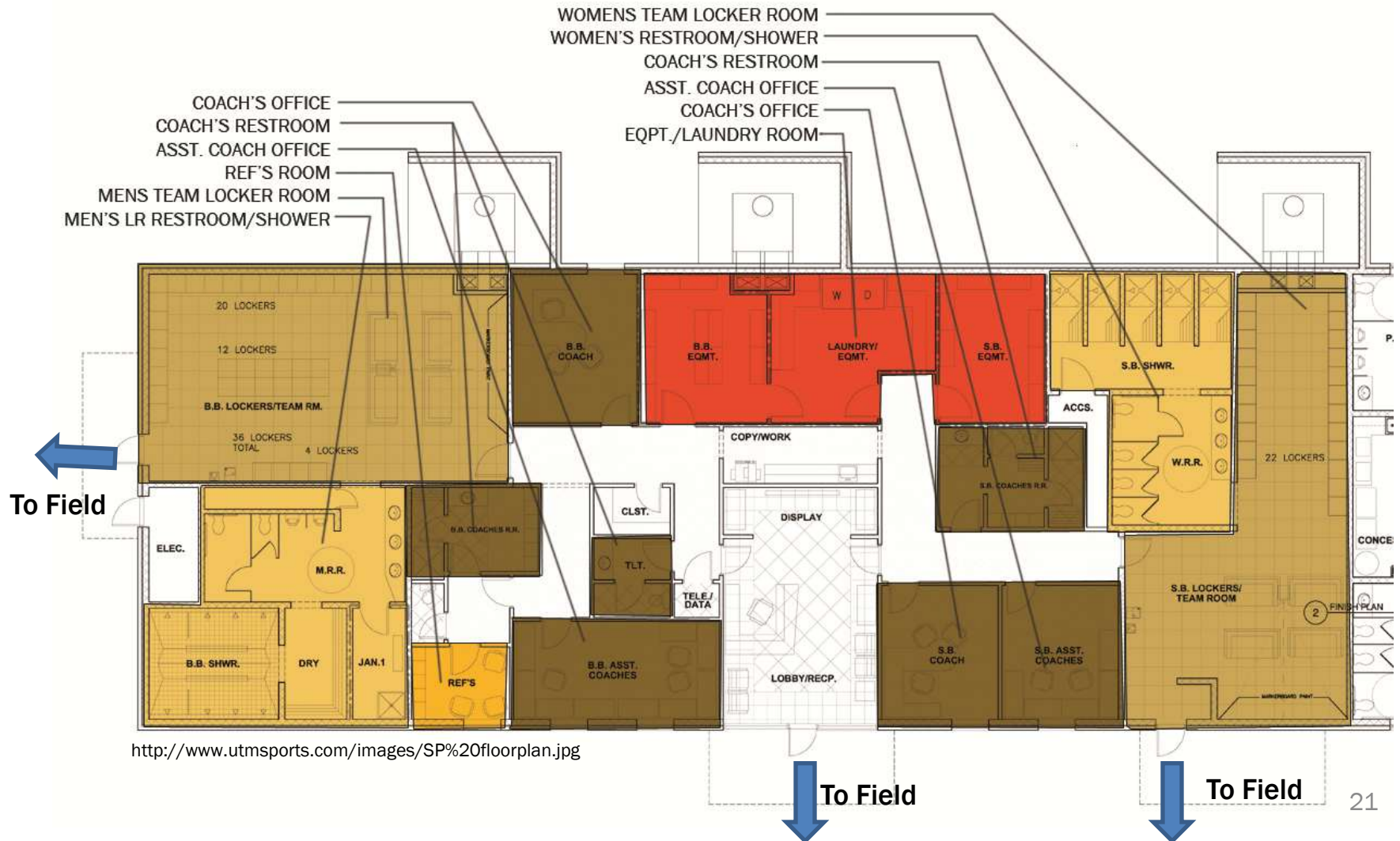
Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	Low	High	Player Lockers, Field

## Requirements:

- When not in use has potential to be used as employee shower for potential LEED credit
- Two Separate Areas containing:
  - A. (6) hooks plus stretching area
  - B. (1) shower, (1) W.C., (2) lavs
    - Shower should be separated for moisture control and potential use for LEED credits.
- Example layout in glossary under locker rooms

## Team Facilities Case Study

- This is an example of a small locker room with men's facilities on the left and women's facilities on the right. This locker room does not include a lounge or separate team room for team meetings so it is incorporated into the locker room. The shower areas are separated by a door or air lock from the other spaces.



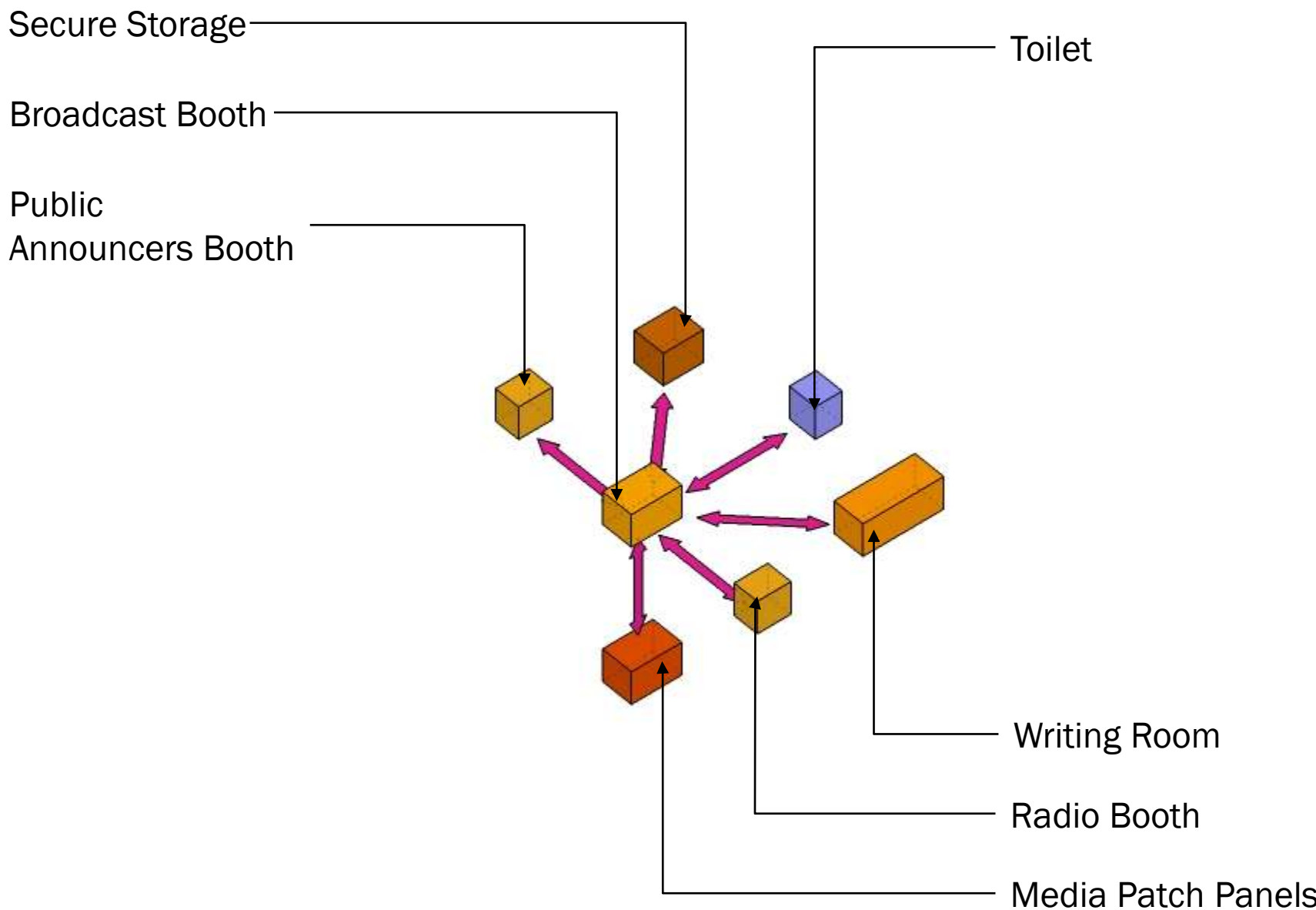
# Media Facilities

	Units	SF/Unit	NSF
<b>Press Box</b>			<b>1295</b>
a. Writing Press Room - seating for 8 writers	8	30	240
b. TV Broadcast Booth	1	150	150
c. Radio Broadcast Booth	1	80	80
d. Public Announcer Booth	1	80	80
e. Press Toilet (1 single use)	1	75	75
f. Secured Storage	1	120	120
g. Patch Panels/Broadcast Connections	1	150	150
h. TV Truck Parking (2@260 SQF)	2	0	0
i. Satellite Up-Link & ENG (2 exterior @200 SQF)	1	0	0
j. Interview Room-use tiered multi-purpose room	1	400	400
<b>Camera Location</b>			<b>35</b>
a. Mid-field in NBB, 2 mounts @45' min above pitch	1	35	35
b. 18-yard boxes @ mid-level, NBB side	2	0	0
c. Both end zones @ mid-level	2	0	0
d. High @ mid-field (roof)	1	0	0
e. Mid-field @ field level one each side	2	0	0
f. Slash Position	0	0	0
g. Each Goal, Goal Cam	0	0	0
h. Field Camera Platform	0	0	0
<b>Total Net</b>			<b>1,330</b>

1,295 sqf **Press Box**  
35 sqf **Camera Location**



# Media Facilities- space diagram



# Press Box

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Private/Media	Low	medium	Field, Vertical Circulation

## Requirements:

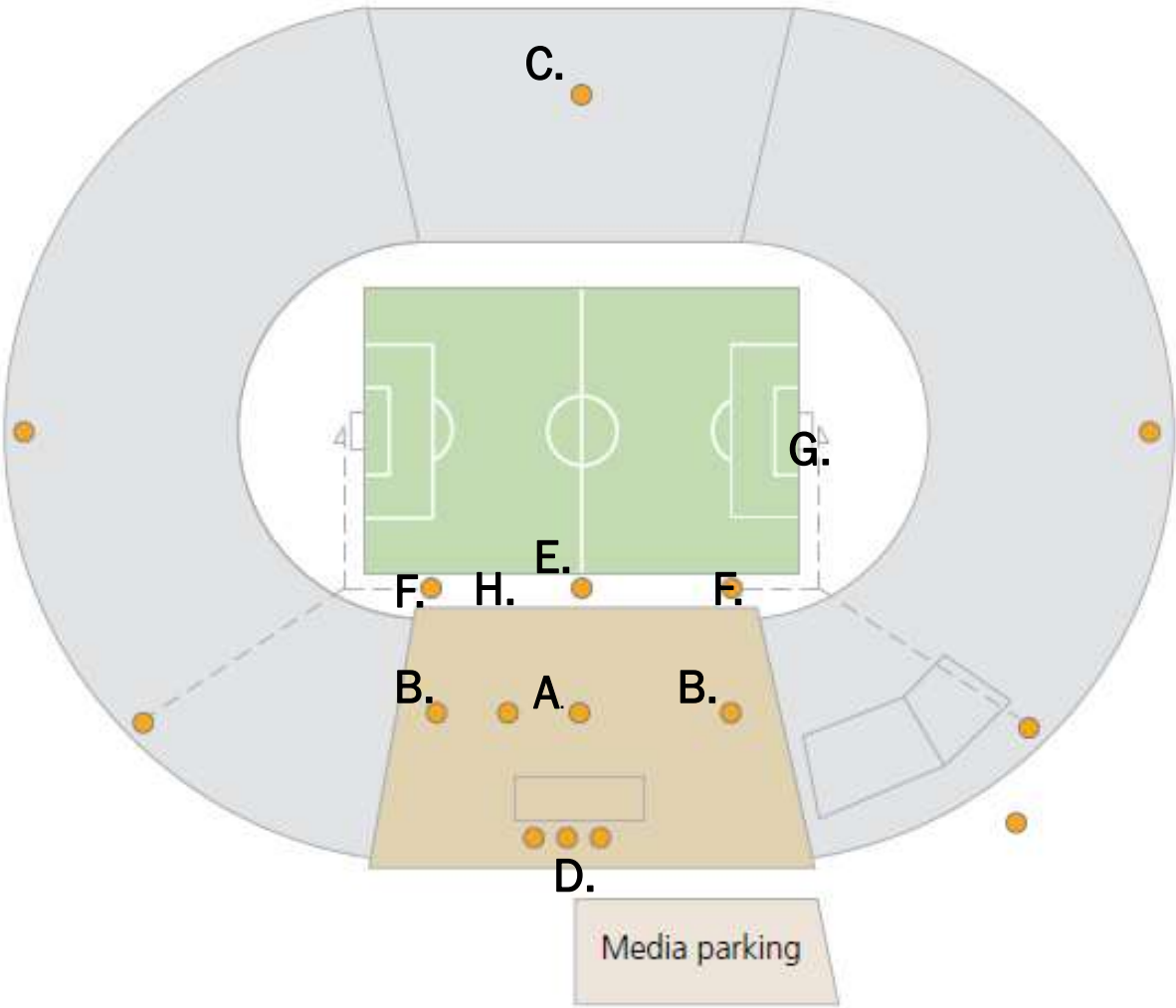
- The press box must be in a central position in the main grandstand
- Should locate parking for easy equipment load-in
- Should have easy access to field and parking
- Press Box Must be covered
- A:Writers Press Room
  - Provide spots for 8 writers desk space at least 24”Dx 36”W
  - Can be tiered space
- B: TV Broadcast Booth
  - Separate from seating bowl by glass
  - Locate on same side of field as main camera
- C: Radio Broadcast
  - Separate from seating bowl by glass
- D: PA Announcer
- E: Press Toilet
  - Single Use Toilet ,see Diagram in glossary under restroom
- F: Secured Storage
  - Misc. storage for media eqpt.
- G: Patch Panels/Broadcast Connection
  - IT Room for broadcast Equipment
- H. TV Truck Parking (2@260 SQF)
- I. Satellite Up-Link & ENG (2 exterior @200 SQF)
  - Should Be adjacent to TV Truck Parking
  - Should have unobstructed view of Southern horizon
- J. Interview Room-use tiered multi-purpose room
  - Located on level of Team Facilities
  - Easy access from Main Press Box
  - Should be designed like small theater with tiered rows of seating at the back of room, with a place for a podium or a long table at the front of the room.
  - Front of Room should have door accessed by Team Facilities. Back of Room should have door accessible to Media

# Camera Locations

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
N/A	Private/Media	Low	Low	Field

## Requirements:

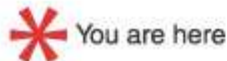
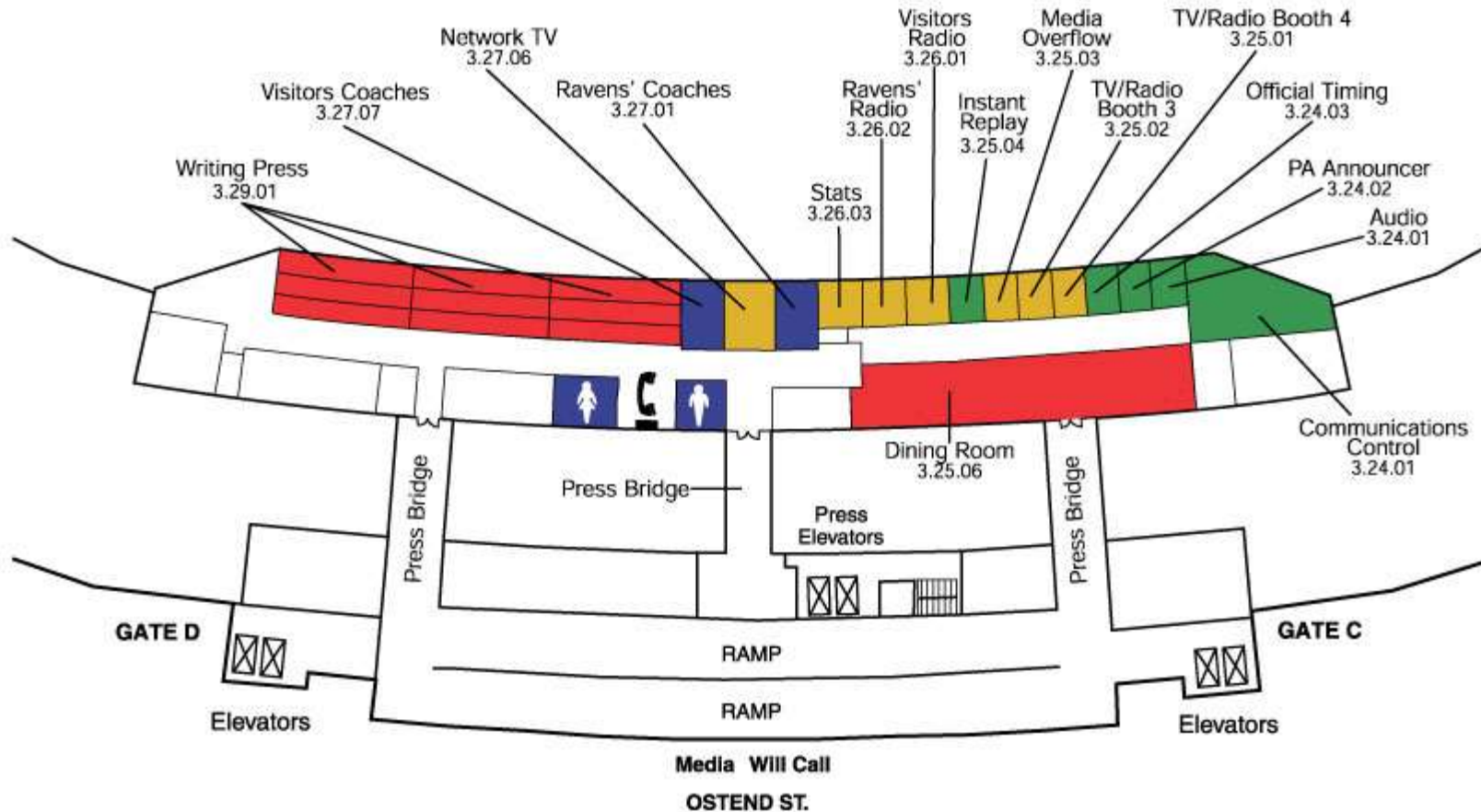
- A: Mid-field in NBB, 2 mounts @45' min above pitch
  - Must face away from sun
  - Must have view of entire field
- B. 18-yard boxes @ mid-level, NBB side
- C. Both end zones @ mid-level
- D. High @ mid-field (roof)
- E. Mid-field @ field level one each side
- F. Slash Position\
- G. Each Goal, Goal Cam
- H. Field Camera Platform- moveable platform that can follow action



(FIFA, 75)

## Media Facilities Case Study

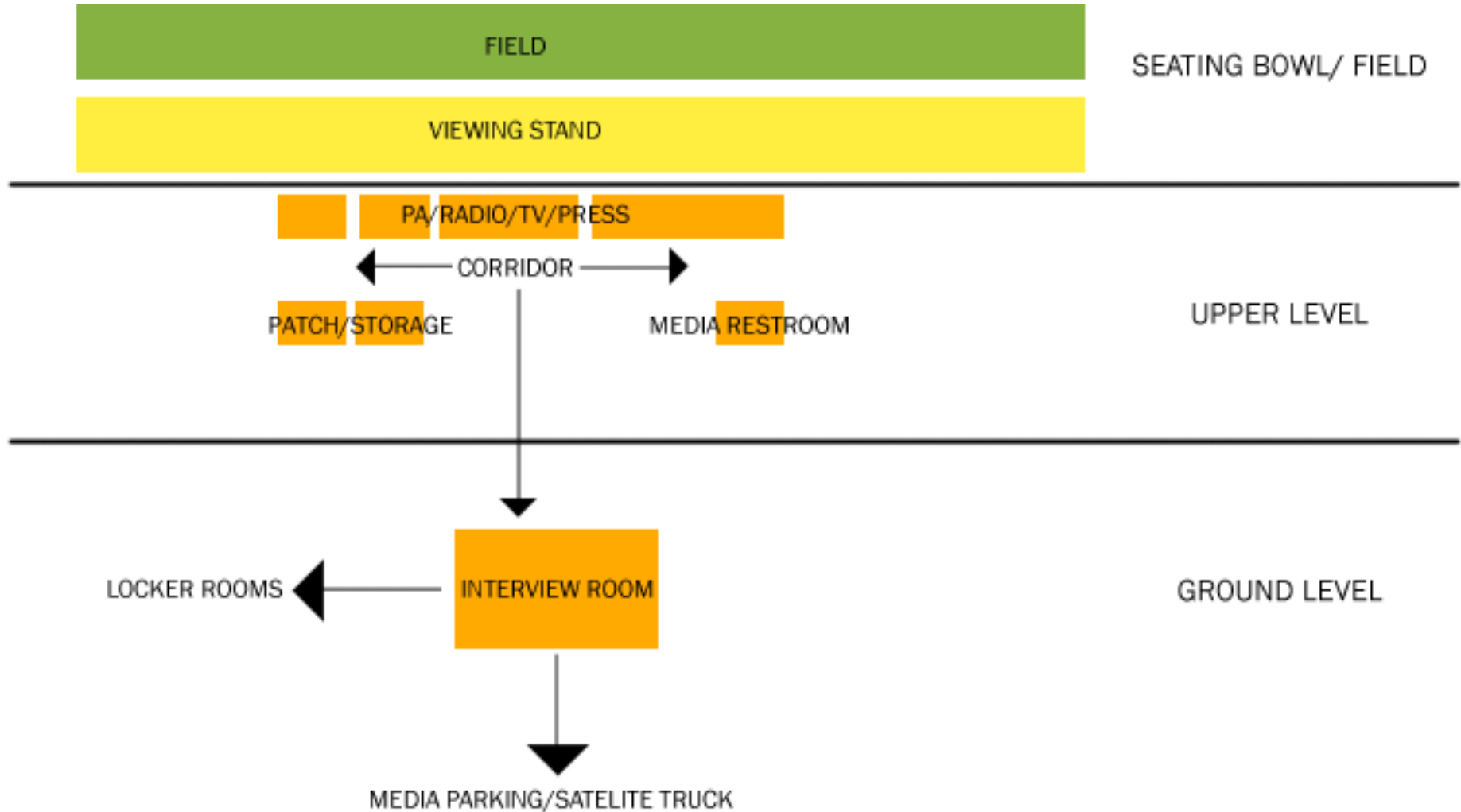
- This plan shows the Press box layout for an NFL facility, but shows the general arrangement of space, placing TV, Radio, PA, and Press in a line with views to the field, with support space on the opposing side of a double loaded corridor.



<http://prod.static.ravens.clubs.nfl.com/assets/img/news/press-box-diagram.jpg>

## Media Facilities Case Study

- This diagram applies the previous case study into our program and displays the general arrangement of programs space and what level they should be located



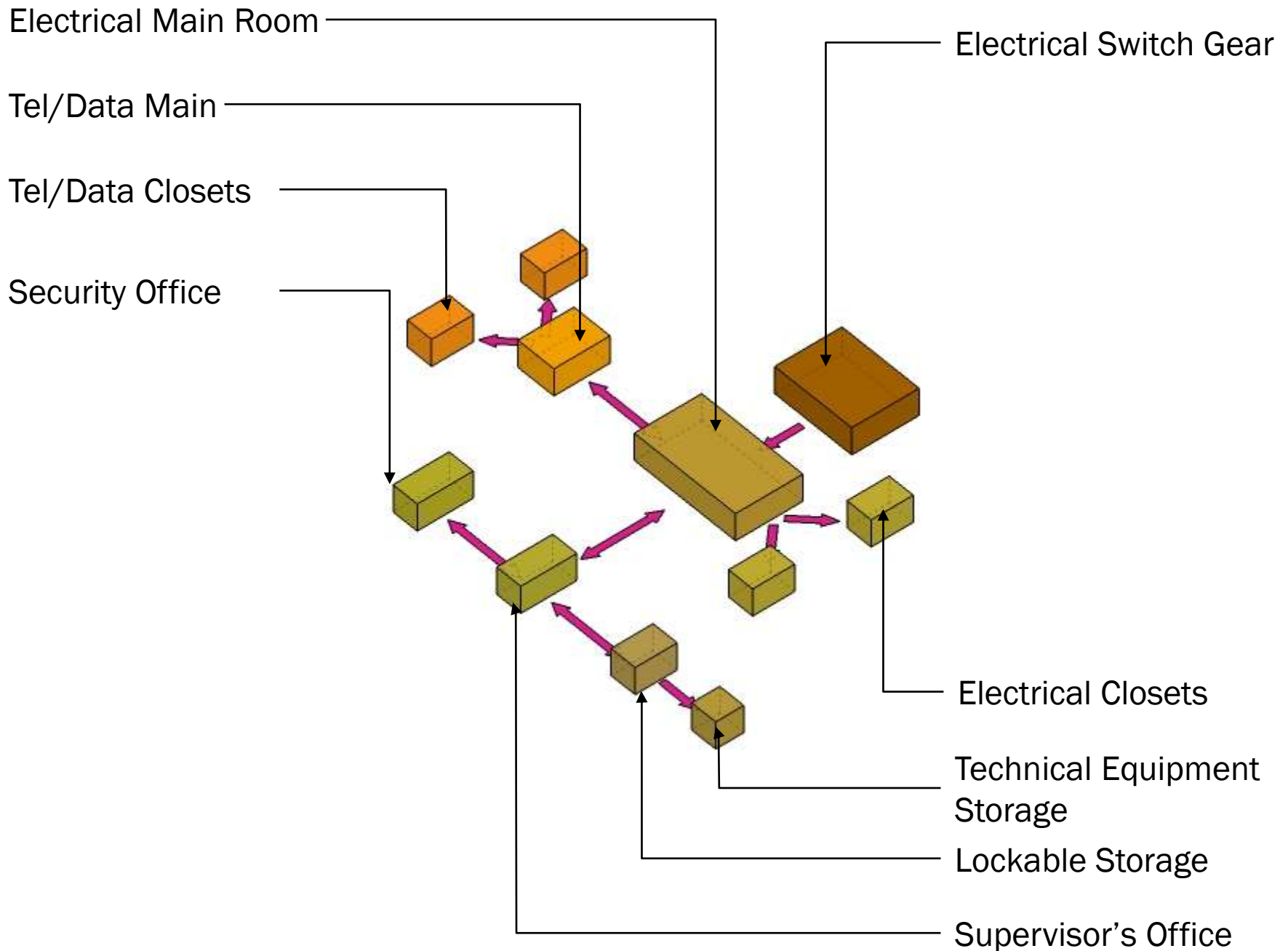
# Operations Support

	Units	SF/Unit	NSF
<b>Operations</b>			<b>550</b>
a. Operations Supervisor Office	1	200	200
b. Security Office	1	200	200
c. Lockable Storage and J.C.	1	150	150
<b>Dock</b>			<b>0</b>
a. Loading Dock (2 doors), trash	1	0	0
<b>General Storage</b>			<b>2950</b>
a. Tech.I Eqpt. (Microphones, ect.)	1	100	100
b. Main Electrical Service	1	1000	1000
c. Electrical Switchgear Distribution	1	750	750
d. Electrical Closets	2	150	300
e. Main Tele/Data Room	1	500	500
f. Tele/Data Closets	2	150	300
g. Mechanical on Stage	0	0	0
<b>Total Net</b>			<b>3,500</b>

0 sqf Loading Dock

2,950 sqf Storage

550 sqf Operations





# Operations

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
High	Private	High	Medium	Administration Facilities, Dock, Security Command Center

**Requirements:**

- A. Operations Supervisor Office
  - 200 SQF
  - Requires Desk/ files storages
- B. Security Office
  - 200 SQF
  - Should include desk, guest chairs
- C. Lockable Storage and J.C.
  - Requires
    - storage shelves
    - Utility sink

# Dock

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public	Medium	Low	Field, Operations Office , Commissary

**Requirements:**

- Used for deliveries
- Space for one truck to load and unload
- Visit this site for loading dock design details: [loading dock](#)
- Space should allocated for trash and recycling pick up
- The following link gives basic design guidelines for trash pick up: [trash pick up](#)

# General Storage

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Private	Low	High	Press Box, Operations Office

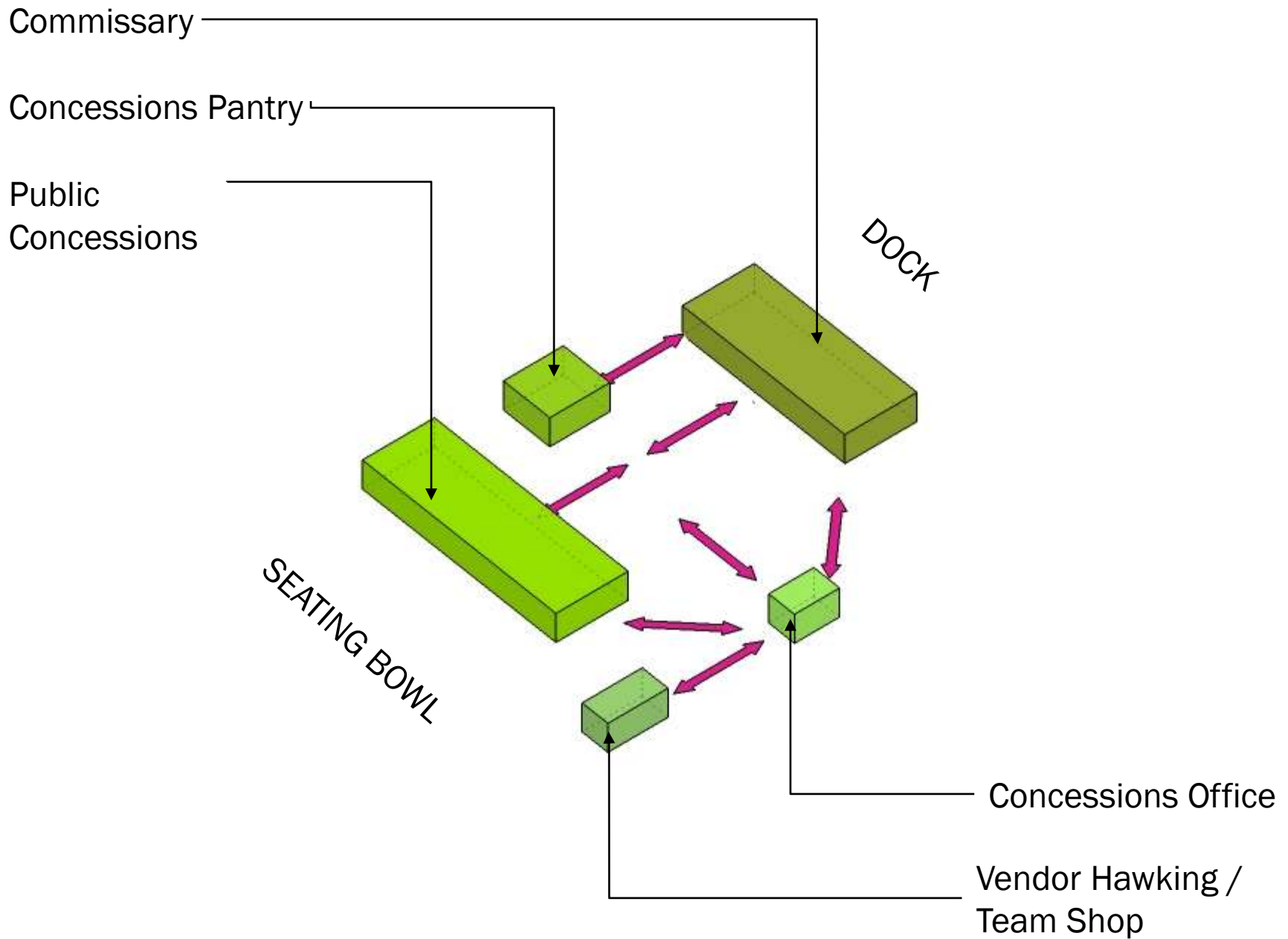
**Requirements:**

- A. Tech.I Eqpt. (Microphones, ect.)
- B. Main Electrical Service
- C. Electrical Switchgear Distribution
- D. Electrical Closets
- E. Main Tele/Data Room
- F Tele/Data Closets
- G.Mechanical on Stage

# Concessionaire

	Phase 1			Phase 2	
	Units	SF/Unit	NSF	Units	NSF
<b>Concession Stands</b>	<b>4000</b>				
a. Public Concession Stands	18	100	1800	9	900
b. Vendor (hawking) Stations	1	200	200	1	200
c. Commissary	1	1500	1500		
d. Suite Pantries	1	350	350		
e. Concessions Office	1	150	150		
<b>Total Net</b>			<b>4,000</b>		<b>1,100</b>





# Concessionaire

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Low	Seating Bowl

## Requirements:

- A. Public Concession Stand
  - 18 Stands at 100 SQF each should be built for phase one
  - plan for 9 additional stands at 100 SQF each for phase 2 expansion
  - Located on course with close proximity to seating bowl
  - Attempts should be made to evenly disperse in all areas of the seating bowl.
- B. Vendor (hawking) Station
  - Storage for hawking vendors
  - Can provide space for break area for hawking vendors
    - seating for 6
  - Plan for an additional room of equal size for Phase 2 expansion
- C. Commissary
  - Warehouse area for dry good concession storage
  - Should be located close to loading dock and centrally located to have access close access to public concession stands
- D. Suite Pantries
  - Used for staging of suite food and storage of dry goods
  - Only one program space required, but may required to be split if suite locations are not all in close proximity
- E. Concessions Office
  - Should can desk, storage, and guest seating
  - Typical office layouts in glossary under office

## Concessionaire Case Study

- In this building, the loading dock is adjacent to the concessions commissary. There are several concession areas scattered in the stadium, but this concession stand is located on the outside of the concourse, but could be located on the inside of the concourse if desired.



# Circulation

	Phase 1			Phase 2	
	Units	SF/Unit	NSF	Units	NSF
Concourse			40000		20,000
a. level 1	1	40000	40000		20,000
b. level 2	0	0	0		
c. level 3	0	0	0		
Suite Entrance			250		
a. suite lobby	1	250	250		
Vertical Circulation			0		
a. Elevator	0	0	0		
b. Ramp/Stair	0	0	0		
Total Net			40,250		20,000

0 sqf Vertical Circulation  
250 sqf Suite Lobby

# Concourse

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Low	Public Restrooms, Seating Bowl

## Requirements:

- The concourse is main circulation space of the stadium.
- In larger stadiums this area is usually fully enclosed but can be partially or mostly open in a stadium of the program size.
- Concourse size will need to increase in implementation of phase 2
- Depending on stadium design concourse can be on a single level with access to seating bowl through vomitories, or can be split between multiple level
- See circulation in glossary for more information

# Suite Entrance

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Public w/ ticket	Low	Low	Suite Lobby, Suites, vertical circulation

## Requirements:

- Ideally suite will have private entrance and private circulation to access suites.
- If suites are placed on opposing sides of the field, 2 Suite entrances will be required
- Should provide elevator and emergency stair access

# Vertical Circulation

Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
low	Public w/ ticket	Low	Low	Suites, Press Box

## Requirements:

- Ramps, elevators, or stairs, should be used as escalators do not meet traffic requirements
- At least one elevator should be provided where vertical access is required, ie. Press box, suite)
- Ramps are popular for safety but must maintain 1:12 slope which requires more space then stairs

## Requirements:

- Stairs are more dangerous than ramps but are most efficient in terms of space and speed
- See Stadia page 166-68 for more information.



# Administration

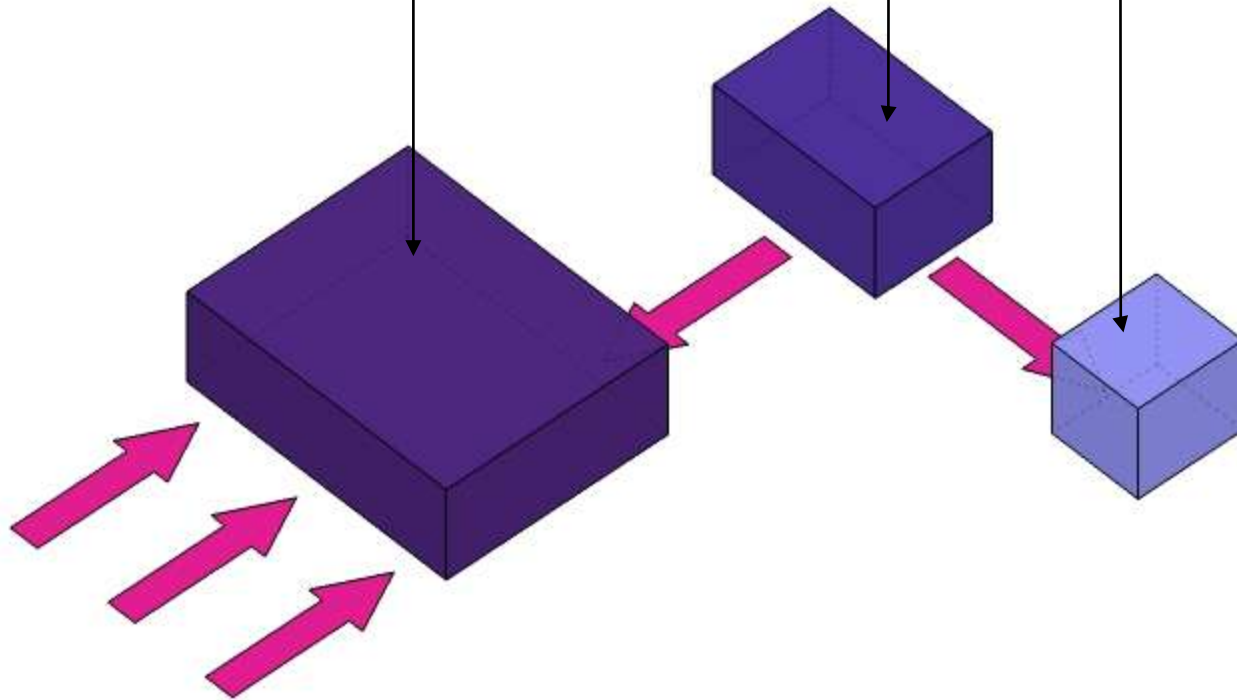
	Units	SF/Unit	NSF
<b>Ticket Office</b>			<b>675</b>
a. Box Office (6) Ticket Windows	6	75	450
b. Office for Ticket Manager	1	150	150
c. Toilet	1	75	75
<b>Total Net</b>			<b>675</b>



Toilet

Ticket Office

Ticket Windows



# Box Office

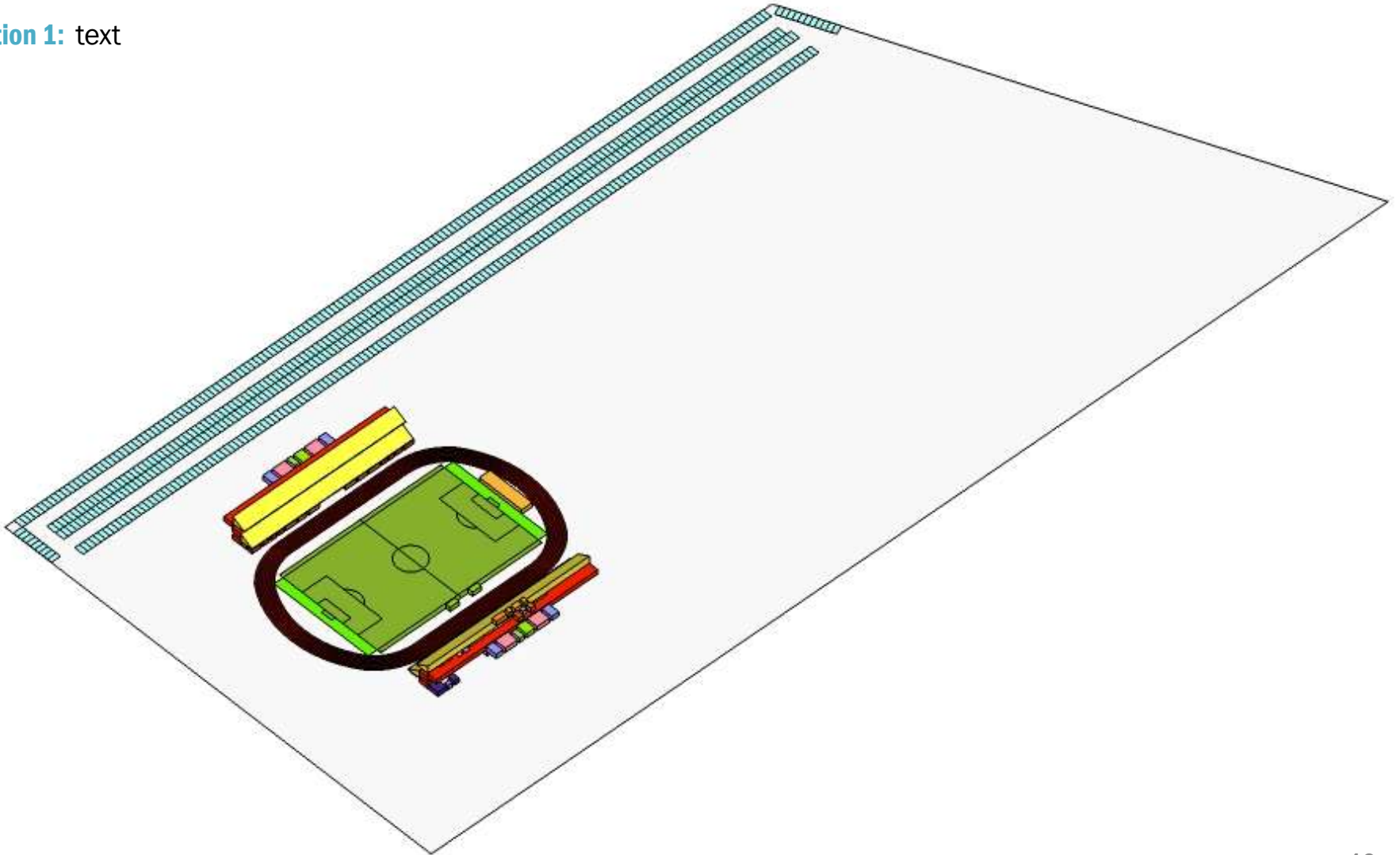
Daylight Potential	Access	Use Frequency	Privacy	Critical Adjacencies
high	Private	High	Medium	Exterior, Main Entrance

## Requirements:

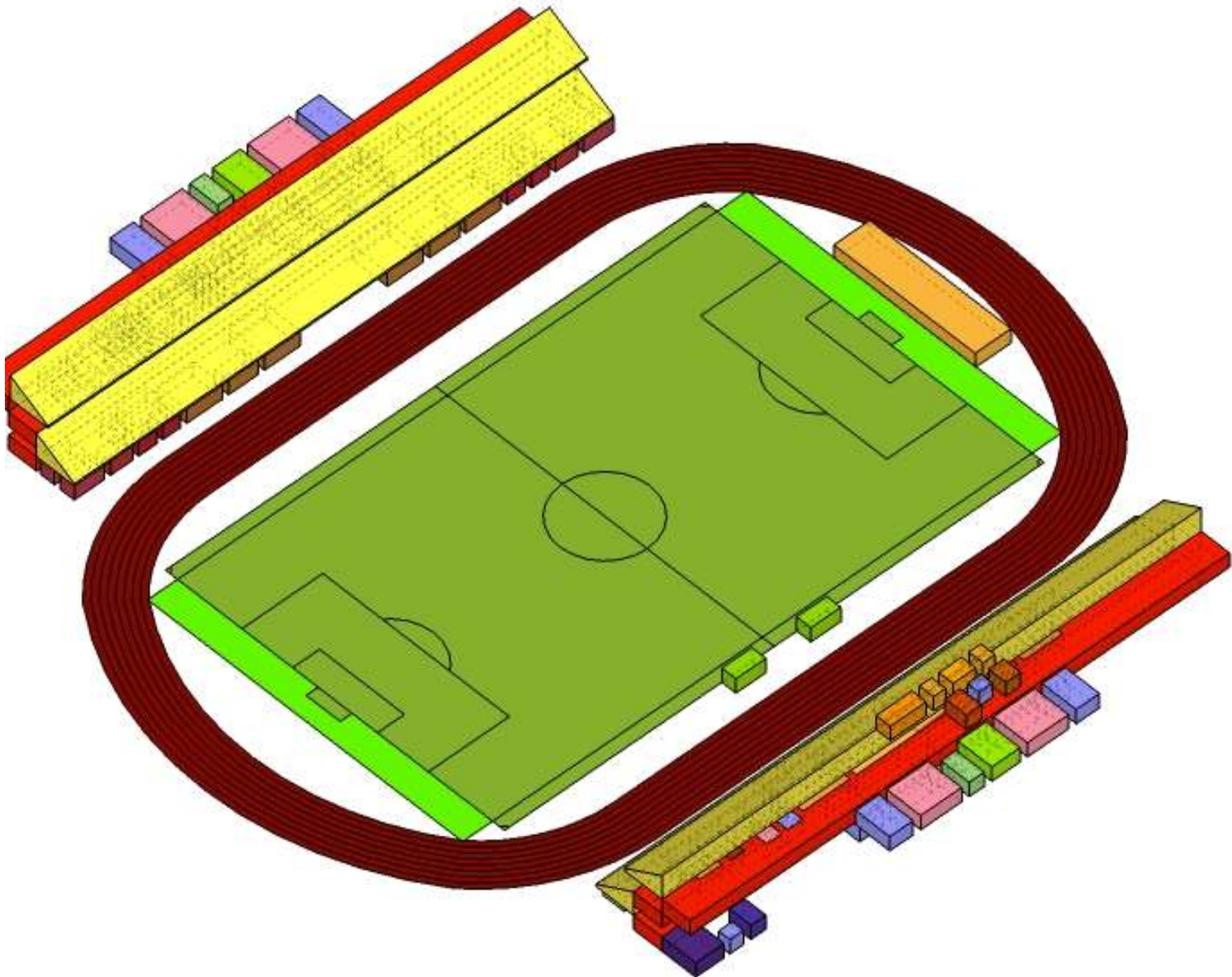
- A. Ticket Window
  - Provide 6 windows with easy access to public that are attempting to purchase tickets
  - Provide 75 SQF to each window, provide 30” deep counter with privacy dividers between windows
- B. Ticket Manager Office
  - See office in glossary for typical office designs.
  - Should be adjacent to ticket window area
  - Full time staff member so office should be grouped with other high frequency functions for energy savings
- C. Toilet
  - Single user toilet, see restrooms in glossary for typical layouts.

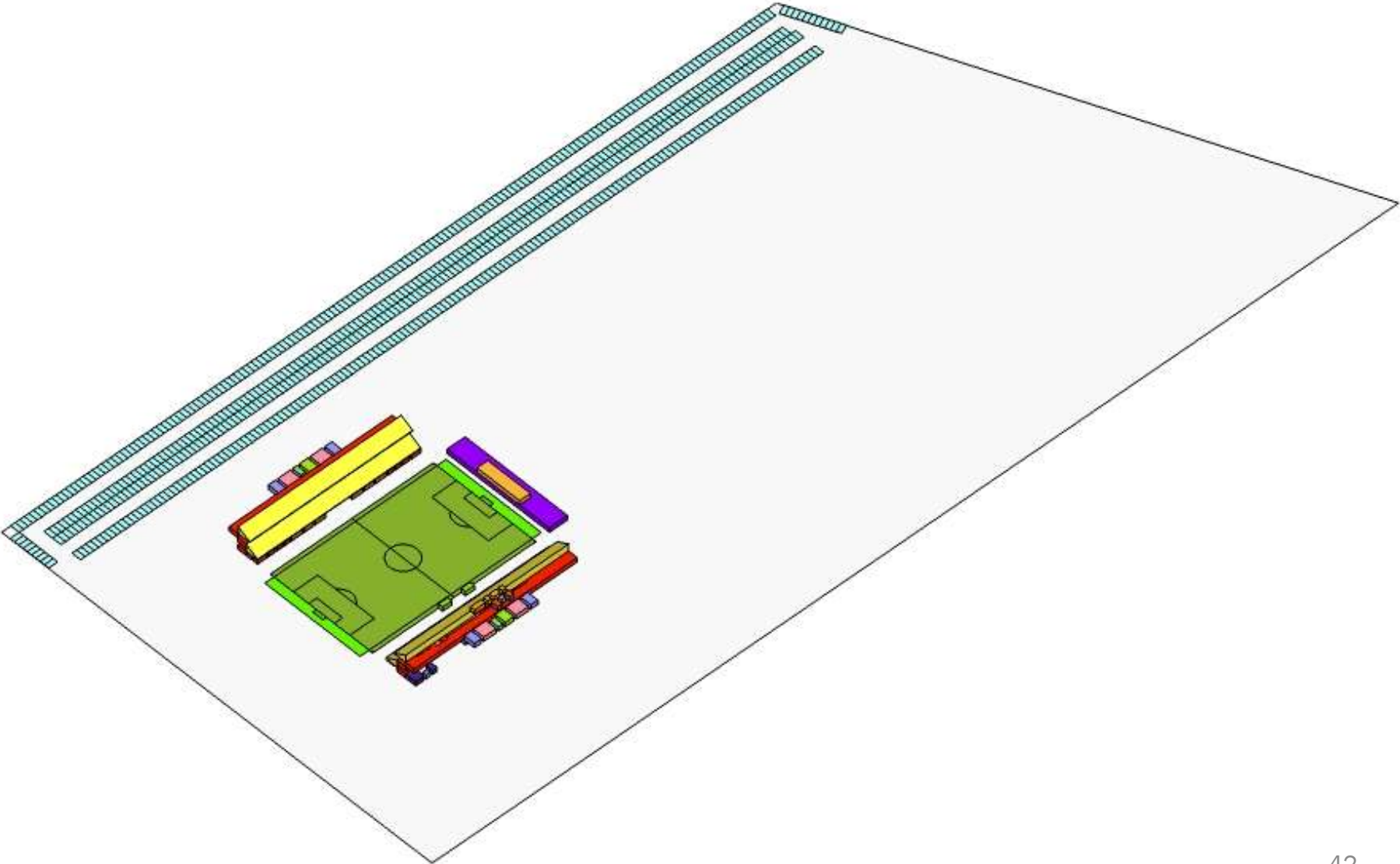
# Massing

Option 1: text



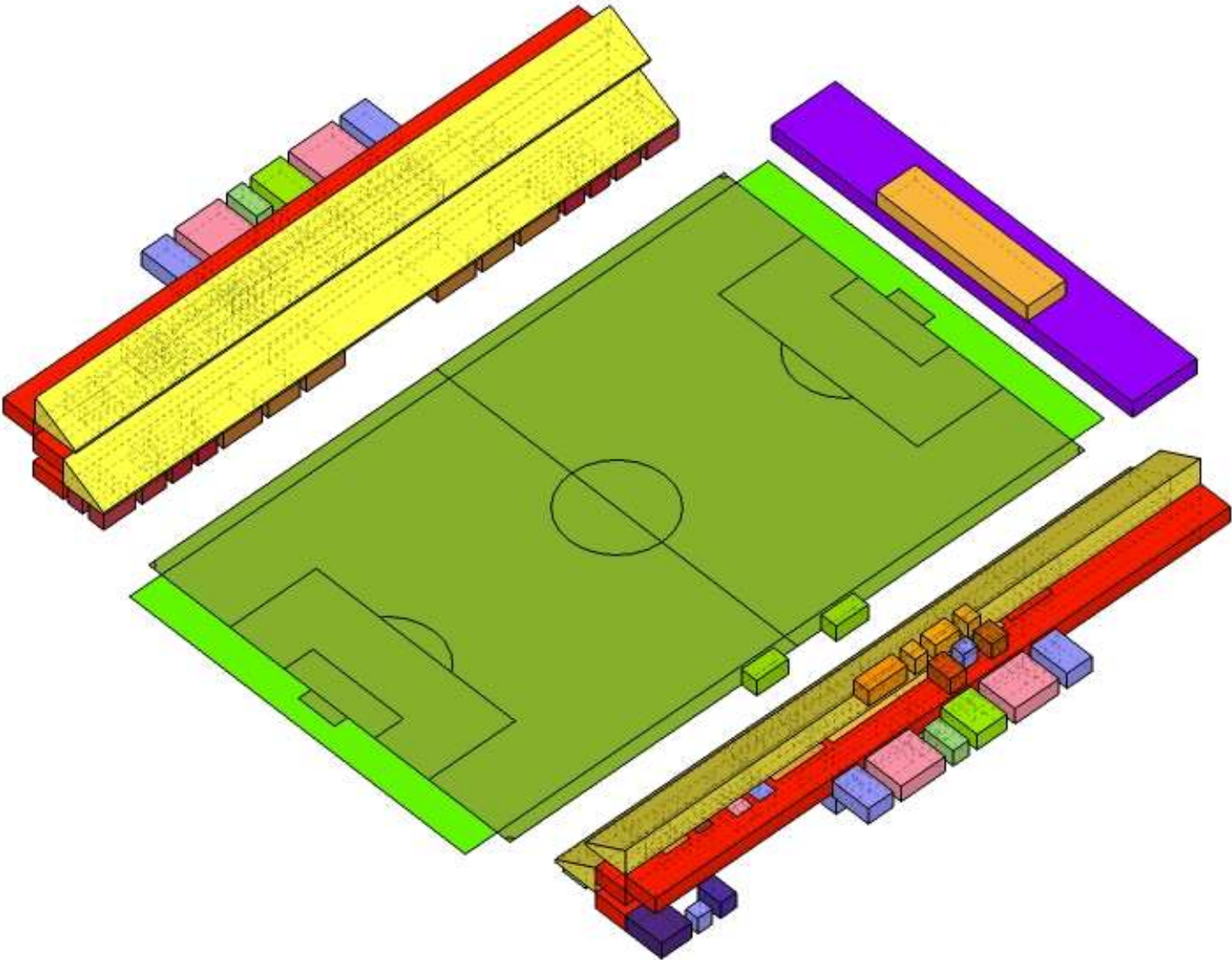
Option 1: text







Option 2: text



# Sustainability

**Light Pollution:** Use of the stadium facilities create situations in which light pollution may become problematic with the large towers required to light the field. The FIFA sustainability initiative “Green Goal” recommends directional lights aimed at the field and use the roof line to protect areas outside the stadium from spill over light. Rather than traditional unshaded light towers that are a source for light pollution.

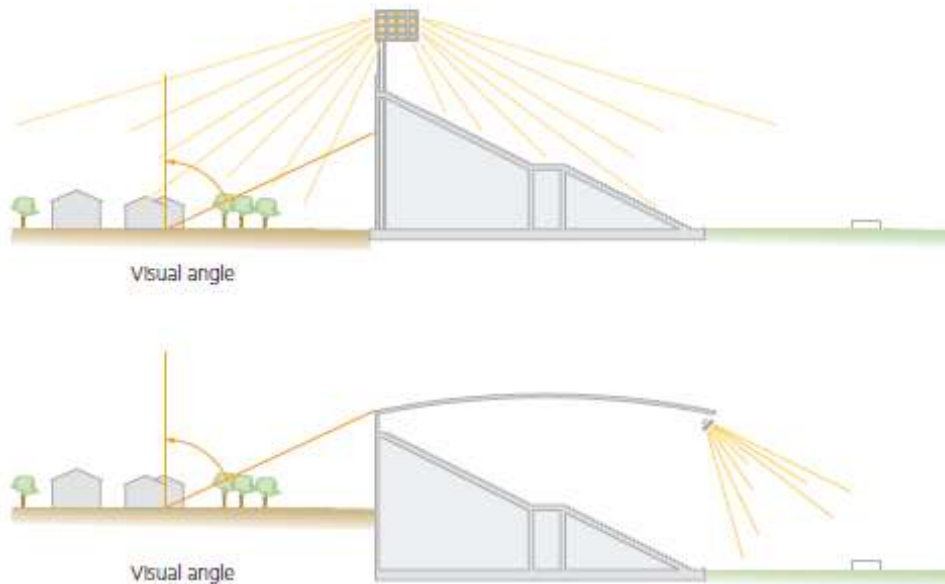


Diagram 1f:  
Possible solution for  
reducing environmental  
impact

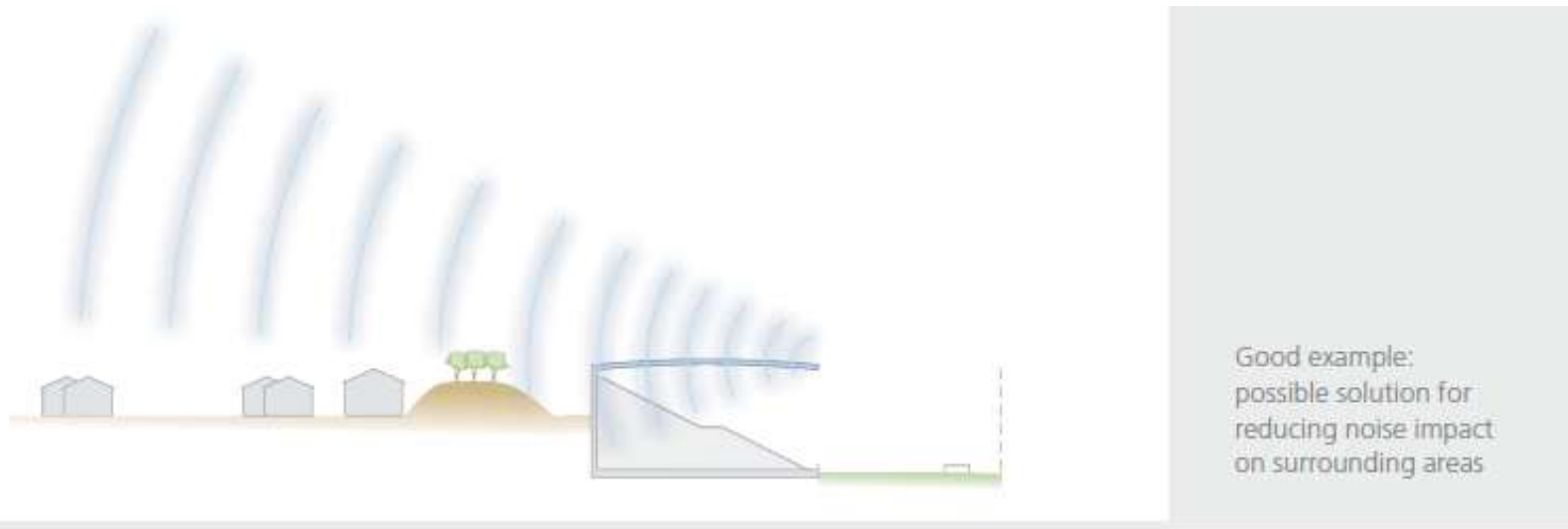
Construction impact on  
residential buildings

Possible solution for  
reducing environmental  
impact

(FIFA, 17)



**Noise:** Because the site is located only a block away on the west side from residential neighborhood, considerations for sound should be made. Some methods, are creating a berm, planting sound absorbing vegetation, or building below grade (which is not a applicable option at the present site).



(FIFA, 17)

**Water:** Low flow fixtures should be used as well as grey water and rain water systems. As a large number of water requirements at this facility can be accomplished without the use of treated water.

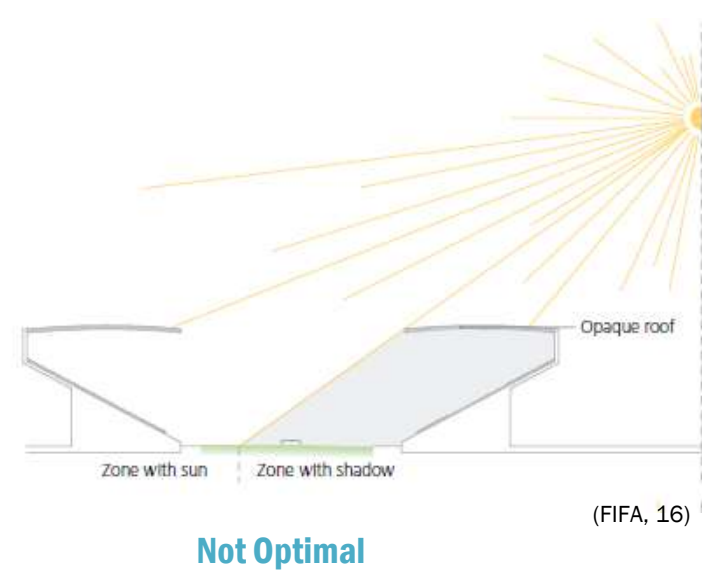
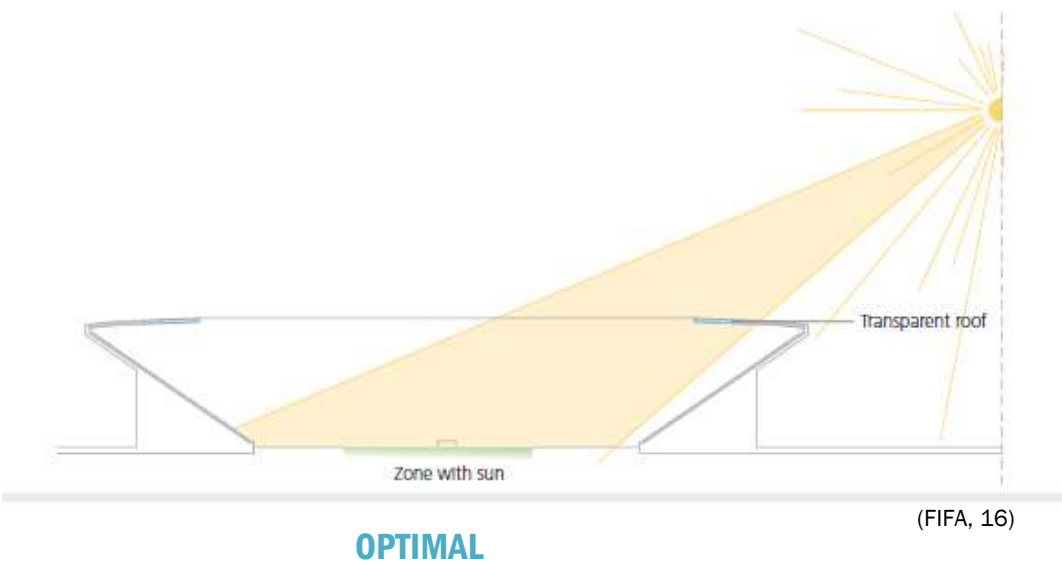
(FIFA, 17)

**Waste:** In order to cut down on waste from the facility, recycling bins should be placed around the stadium. The program also can expand to include a recyclable collection room near the waste removal pick up.

(FIFA, 17)

**Grouping High Frequency Spaces:** In order to cut down on heating and cooling areas of the stadium that may not be used often grouping high frequency use program elements may allow for only small portions of the building to be conditioned. These include, the Pro locker rooms, team rooms, and training suite, the box office, and the operations office. Other areas are generally only used during events and do not need to be conditioned to normal environmental comfort standards.

**Lighting and Daylighting:** Daylighting can be taken advantage of in several spaces within the program. When considering a roof or shading device, consider options that may cut down on the necessity for artificial light but still provide protection from the sun and elements for the players and audience. Considerations should also be made for the shadow created on the field.



# Accessibility

**Restrooms:** Single user restrooms should be designed to ADA Standards, Multi-user restrooms should contain at least one Accessible stall and lavatory. More sustainable restroom information is available in glossary under restroom

Total seated capacity	Number of wheelchair spaces
Under 10 000	At least 6, or 1 in 100 of seated capacity, whichever is greater.
10 000 to 20 000	100 plus 5 per 1000 above 10 000

(Stadia, 125)



(astc.org)

**Seating:** ADA accessible seating should be provided in multiple locations in the stadium, such as the top and bottom of seating section. See the diagram below for an illustration.

The chart to the left provides the ADA seating requirements of this size

Total seated capacity	Number of wheelchair spaces
Under 10 000	At least 6, or 1 in 100 of seated capacity, whichever is greater.
10 000 to 20 000	100 plus 5 per 1000 above 10 000

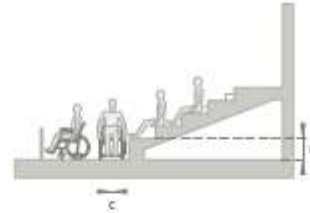
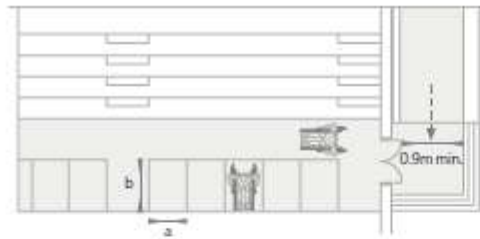


Diagram 6e:  
Dimensions of viewing area  
for wheelchair users

a = 0.90m min.  
b = 1.40m min.  
c = 0.90m min.  
d = 0.60m min.

(Stadia, 125)

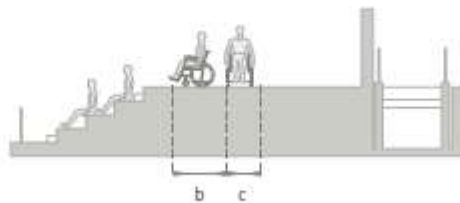


Diagram 6f:  
Dimensions of viewing area  
for wheelchair users

a = 0.90m min.  
b = 1.40m min.  
c = 0.90m min.

(FIFA, 115)

# Feasibility

Mortgage Calculations				
Component	Per Seat Cost	Seats		
Construction Costs	\$2,700.00	8,000	\$21,600,000.00	
Infrastructure Costs	\$680.00	8,000	\$5,440,000.00	
Land Costs	\$2,000,000.00			
			\$29,040,000.00	
Amortized Payment				
Principal	Monthly Payment	Yearly Total	Total Interest	Total Repayment
\$29,040,000.00	\$130,402.58	\$1,564,830.96	\$17,904,917.14	\$46,944,917.14

<b>Expenses</b>					
	Rate	Hours Per Event	Events/year	Employees	Annual totals
Sporting Events					
Ticket Takers	\$8.00	6	72	10	\$34,560.00
Ushers	\$6.00	6	72	30	\$77,760.00
Administration Manager	\$16.00	6	72	2	\$13,824.00
					<b>\$126,144.00</b>
Team					
	Salary/Year			Players/Coaches	
Player Salaries	\$20,000.00			48	\$960,000.00
Coaches Salaries	\$35,000.00			6	\$210,000.00
Officials	Part of League Fee			-	
League Fees	10% of Tickets				\$1,229,472.00
					<b>\$2,399,472.00</b>
Concerts					
				Employees	
Talent and Road Crew	50% of Gross Ticket Sales				\$11,250,240.00
Ushers	\$6.00	7.5	24	10	\$10,800.00
Ticket Takers	\$8.00	7.5	24	30	\$43,200.00
Security	\$20.00	7.5	24	12	\$43,200.00
					<b>\$11,347,440.00</b>
Building					
	Rate Averaged per seat	Capacity	Monthly		Annually
Utilities	\$2.50	8000	\$20,000.00		\$240,000.00
Maintainance	\$2.00	8000	\$16,000.00		\$192,000.00
					<b>\$432,000.00</b>
<b>Total Yearly Operating Costs</b>					<b>\$14,305,056.00</b>

<b>Concert Event</b>				
<b>Ticket Revenue</b>				
<b>Seat Location</b>	<b>Price</b>	<b>Units</b>	<b>Gross Revenue</b>	
Bowl Seat	\$40.00	6910	\$276,400.00	
Suite Seat	\$80.00	120	\$9,600.00	
Club Seat	\$60.00	800	\$48,000.00	
Party Suite Seat	\$80.00	24	\$1,920.00	
Patio Seat	\$10.00	160	\$1,600.00	
Field Level Seat	\$50.00	12,000	\$600,000.00	
<b>Total Revenue for Full House Concert Event</b>			<b>\$937,520.00</b>	
<b>Concert Event Totals</b>				
<b>Potential Events</b>	<b>Seats</b>	<b>Income</b>	<b>Annual Event Total</b>	<b>Potential Annual Revenue</b>
Low	5,000	\$234,380.00	24	\$5,625,120.00
Mid	10,000	\$468,760.00		\$11,250,240.00
High	15,000	\$703,140.00		\$16,875,360.00
Max	20,000	\$937,520.00		\$22,500,480.00

Concession Sales	Per Seat Sales	Seats		concerts	Yearly Gross Sales
Food and Drink	\$5.00	8000	\$40,000.00	96	\$3,840,000.00
Hawking Sales	\$8.00	8000	\$64,000.00	96	\$6,144,000.00
					<b>\$9,984,000.00</b>
Net After Concession Contract 20%					<b>\$1,996,800.00</b>
<b>Total Yearly Gross Revenue</b>			<b>\$36,804,800.00</b>		

<b>Sporting Event</b>				
<b>Ticket Revenue</b>				
<b>Seat Location</b>	<b>Price</b>	<b>Units</b>	<b>Gross Revenue</b>	
Bowl Seat	\$20.00	6910	\$138,200.00	
Suite Seat	\$50.00	120	\$6,000.00	
Club Seat	\$30.00	800	\$24,000.00	
Party Suite Seat	\$40.00	24	\$960.00	
Patio Seat	\$10.00	160	\$1,600.00	
<b>Total Revenue for Full House Sporting Event</b>			<b>\$170,760.00</b>	
<b>Sporting Event Totals</b>				
<b>Potential Events</b>	<b>Seats</b>	<b>Income</b>	<b>Annual</b>	<b>Potential Annual Revenue</b>
Low	2,000	\$42,690.00	72	\$3,073,680.00
Mid	4,000	\$85,380.00		\$6,147,360.00
High	6,000	\$128,070.00		\$9,221,040.00
Max	8,000	\$170,760.00		\$12,294,720.00

<b>Parking Revenue Sporting Event</b>			
	<b>Stall Count</b>	<b>Price</b>	
General	600	\$5.00	\$3,000.00
VIP	100	\$7.00	\$700.00
Valet	50	\$12.00	\$600.00
			<b>\$4,300.00</b>
<b>Parking Revenue Concert Event</b>			
	<b>Stall Count</b>	<b>Price</b>	
General	600	\$10.00	\$6,000.00
VIP	100	\$15.00	\$1,500.00
Valet	50	\$20.00	\$1,000.00
			<b>\$8,500.00</b>



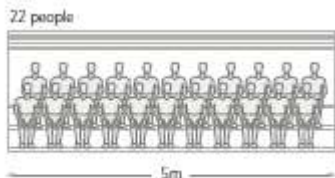
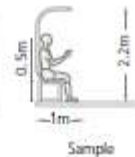
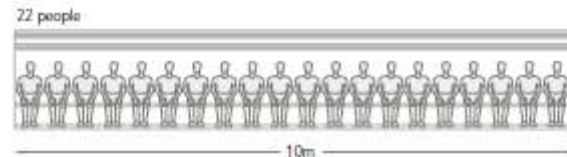
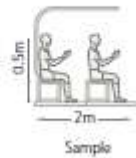
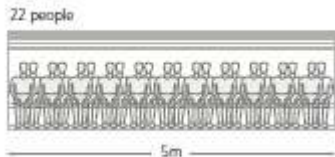
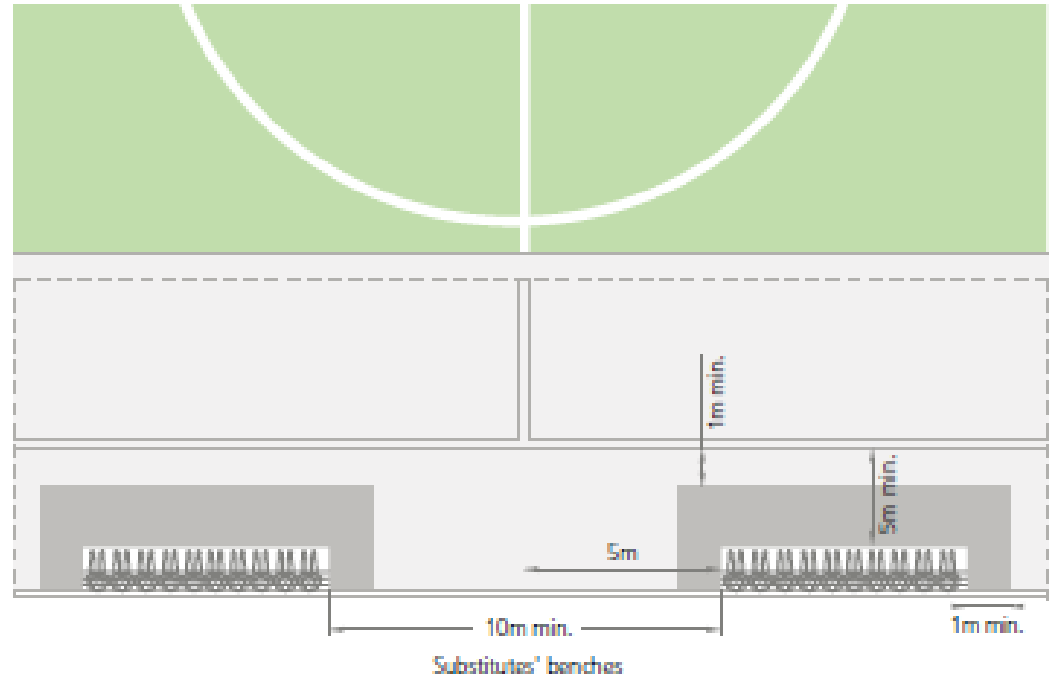
# Glossary

## Benches:

The diagrams below provide some information relative to the placement of the player benches.

Showing three options for the layout of the benches

- 10m = about 32'
- 5m = about 16'



(FIFA, 40)

## Circulation

**Gates :** There are several ways of allowing spectators into the stadium, but most fall into the two broad categories of gates and turnstiles. Gates are cheap, and an open gate of a metre's width can allow approximately 4000 spectators to pass through per hour whereas turnstiles are expensive and will only pass through 500 to 750 spectators per hour.

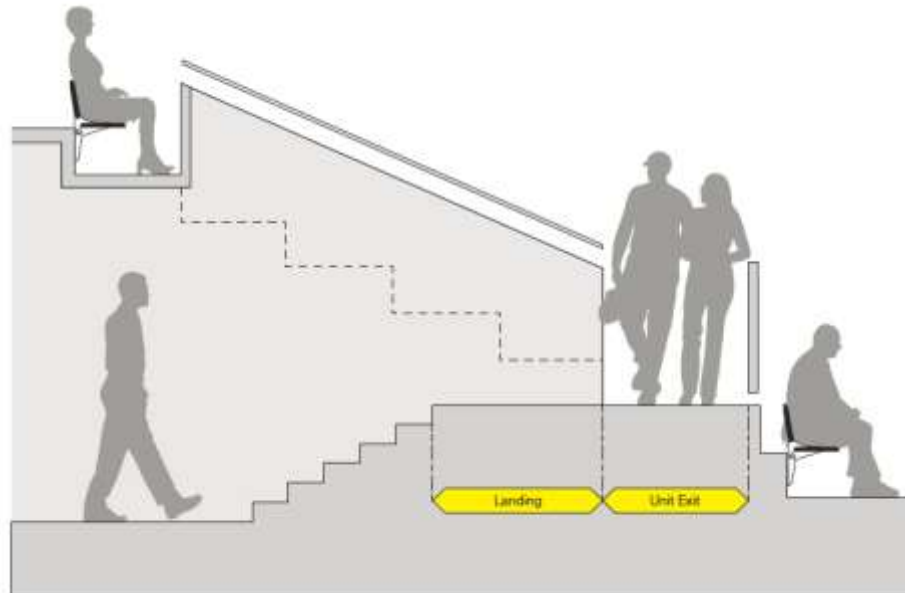
**Location of gates:** The location of entrance gates in the perimeter barrier will depend on three factors which may to some degree conflict with each other, requiring an early decision on priorities:

- To avoid congestion entrances should be spaced at regular intervals around the circumference.
- If mutually hostile fans must be kept apart it is again desirable for entrances to be widely separated.
- But management may want entrances to be grouped closely together for convenience of staffing and security

**Scales of Ticket Takers:** Registering reversible turnstiles, and space for ticket takers, should be provided on a basis of one turnstile or every 500 to 750 spectators depending on the type of event (see below). In addition to these, one exit turnstile or gate should be provided for each group of turnstiles to allow for the ejection of spectators when required.

**Vomitory:** The figure below shows a beneficial change of level of this kind, through a vomitory. Entering the seating tier via a ramp or a short flight of stairs serves two purposes: on entry, forward pushing by the spectators into the relatively narrow seatways is reduced by the preceding rise in level; and on leaving, spectators can see over the heads of those in front of them and are therefore much more aware of the circumstances ahead.

(text from Stadia, 155-169)



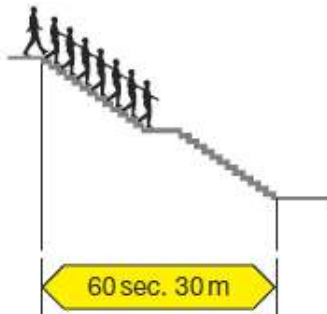
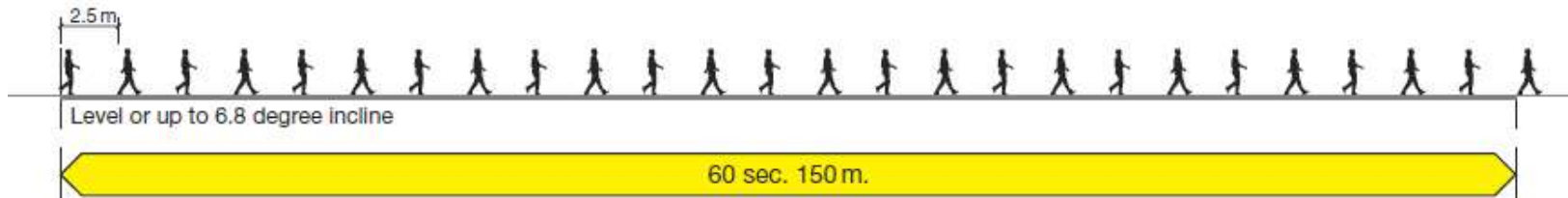
(Stadia, 161)

## Circulation (cont.)

**Exiting:** The method described below illustrates optimal limits for safe exiting, more can be read on this topic in Stadia, pages 163-165

Average unobstructed walking velocity is 150 m per minute.  
A person exits every second or every 2.5 metres. (9 km/h)

One line exit width allows 60 people to pass through it in 1 minute



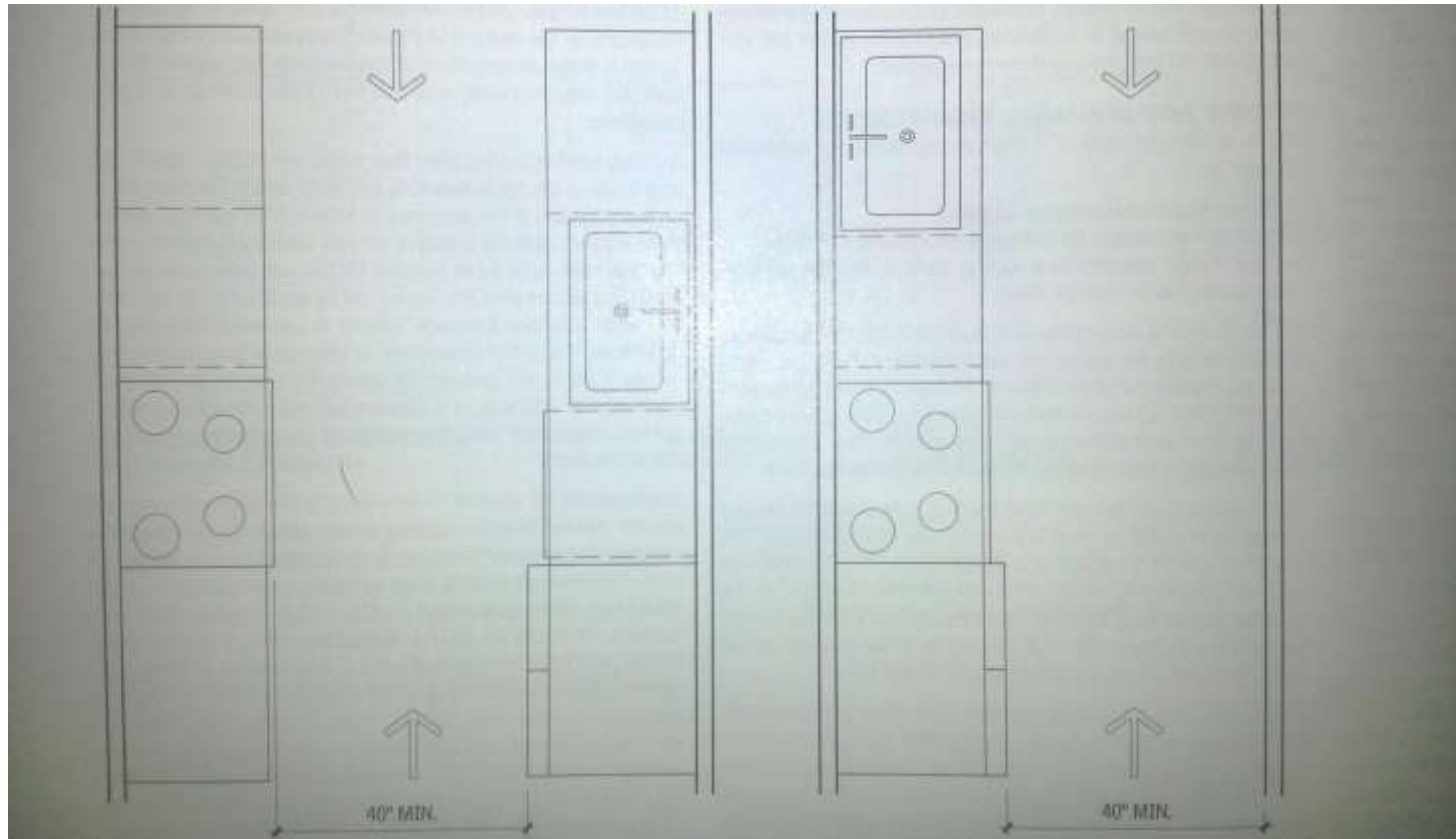
Average unobstructed walking on staircase 30 m per minute (1.8 km/h).  
Spacing between people is 0.75 m.

Timed exit analysis

Safe exit time is regulation period minus exit time to place of safety

## Concessions

The following layout is for a kitchen, but it gives an example of space required for a concession stand



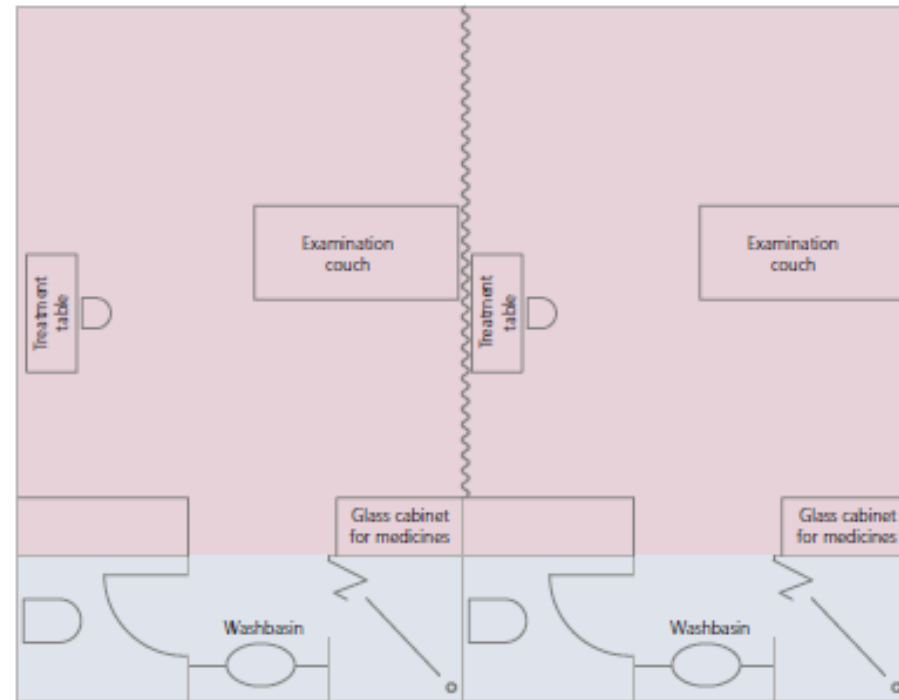
(Stadia, 922)

## First Aid Room

**Recommendations:** The Taylor Report suggests there should be a room of at least 300 sqf and of regular shape. As an interesting comparison, the UK Guide to Safety at Sports Grounds (see Bibliography) recommends at least 160 sqf or 170 sqf if stadium capacity is above 15,000 spectators. The rooms should also:

- **Be easily accessible** from all parts of the stadium and be located near to a point of access for transport to hospital.
- **Be near to a WC** which should be accessible to wheelchair users and to a private waiting area with chairs, where patients and relatives can wait.
- **Have doorways of sufficient width** to allow easy passage of a stretcher plus attendants.
- **Have good ventilation, heating and lighting**, and be designated a no-smoking area.
- **Have sufficient storage** space for equipment.
- **Provision to treat three** patients simultaneously, with reasonable privacy.
- **All surfaces hard**, impervious and easy to clean
- **Effective means of communication** to and from a central control point and the emergency services. A telephone link with an exclusive external line would be the best such means.
- **Stainless steel sink**, work surface, wash hand basin, drainage, hot and cold water supply (including drinking water), soap and hand drying facilities.

(Stadia, 203)



(FIFA, 91)

# Lights

According to FIFA guidelines this stadium is Categorized as Class II facility meaning that It will host club level competition. The diagrams To the right show recommendations for class II facilities in order to meet The following requirements:

- 6 Light towers
- Proper mounting height and angle
- Light properties given on chart

For more See FIFA guidelines pg. 165-187)

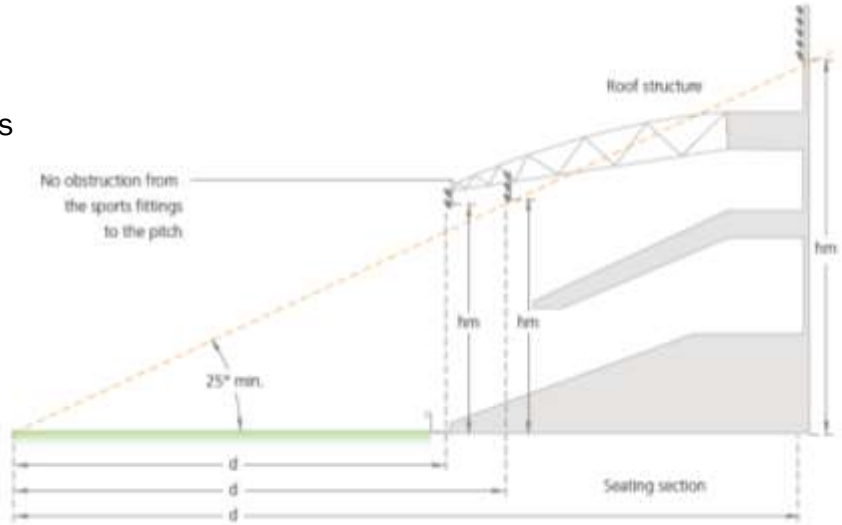
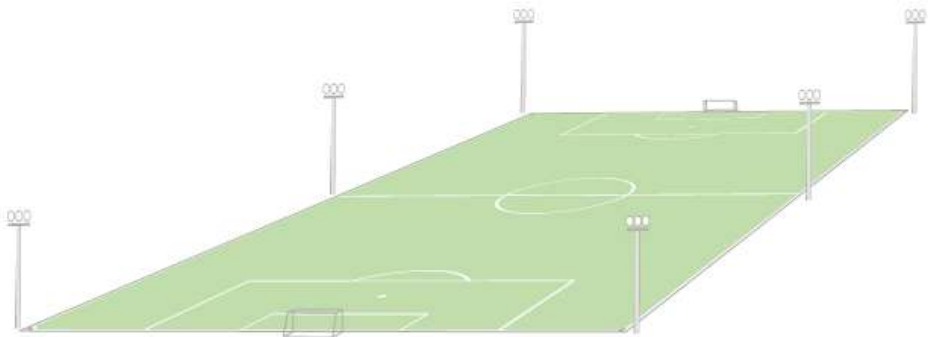


Diagram 9c:  
Mounting height of  
light fittings

$$\text{Mounting height} \geq 25^\circ$$

$$h_m = d \cdot \tan(25^\circ)$$

(FIFA, 168)



Class II  
League and club

Activity level	Horizontal illuminance	Uniformity	Lamp colour temperature	Lamp colour rendering
Class II Leagues and clubs	500	0.6	> 4,000	≥ 65

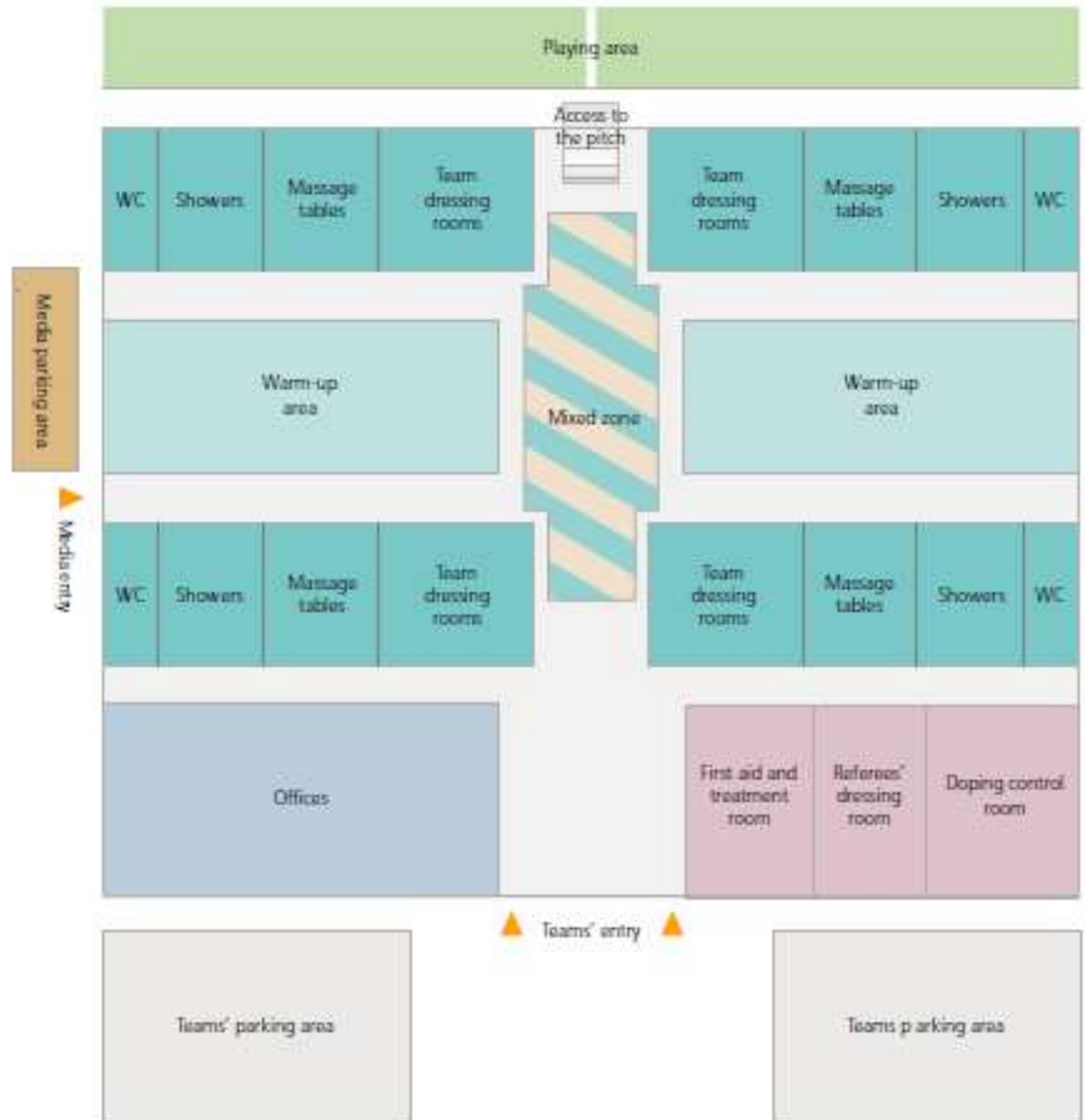
(FIFA, (173)

(FIFA, (177)

## Locker Rooms

The diagram on the right shows a general layout for locker rooms facilities.

To read more about locker rooms go to the FIFA stadium guidelines pages (88-91)



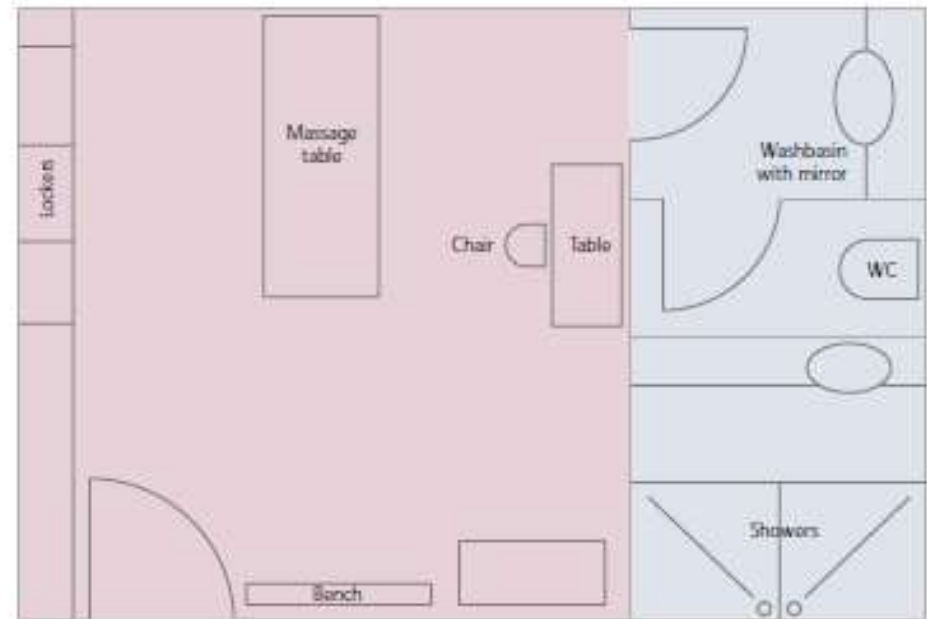


## Locker Rooms (cont)

The diagram on the right shows an example layout for a referee or officials locker room.

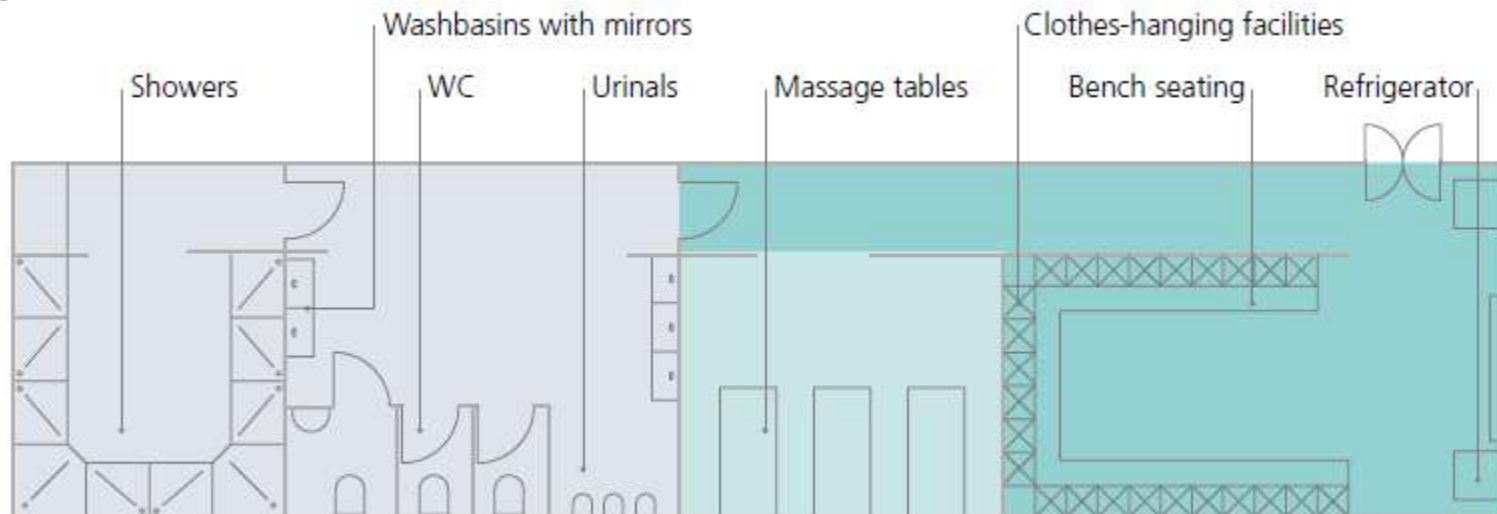
The diagram below show a layout for a team locker room with showering and restroom facilities. This diagram also includes massage tables which are not included in the program for this stadium.

### Example Officials Locker Room



(FIFA, 91)

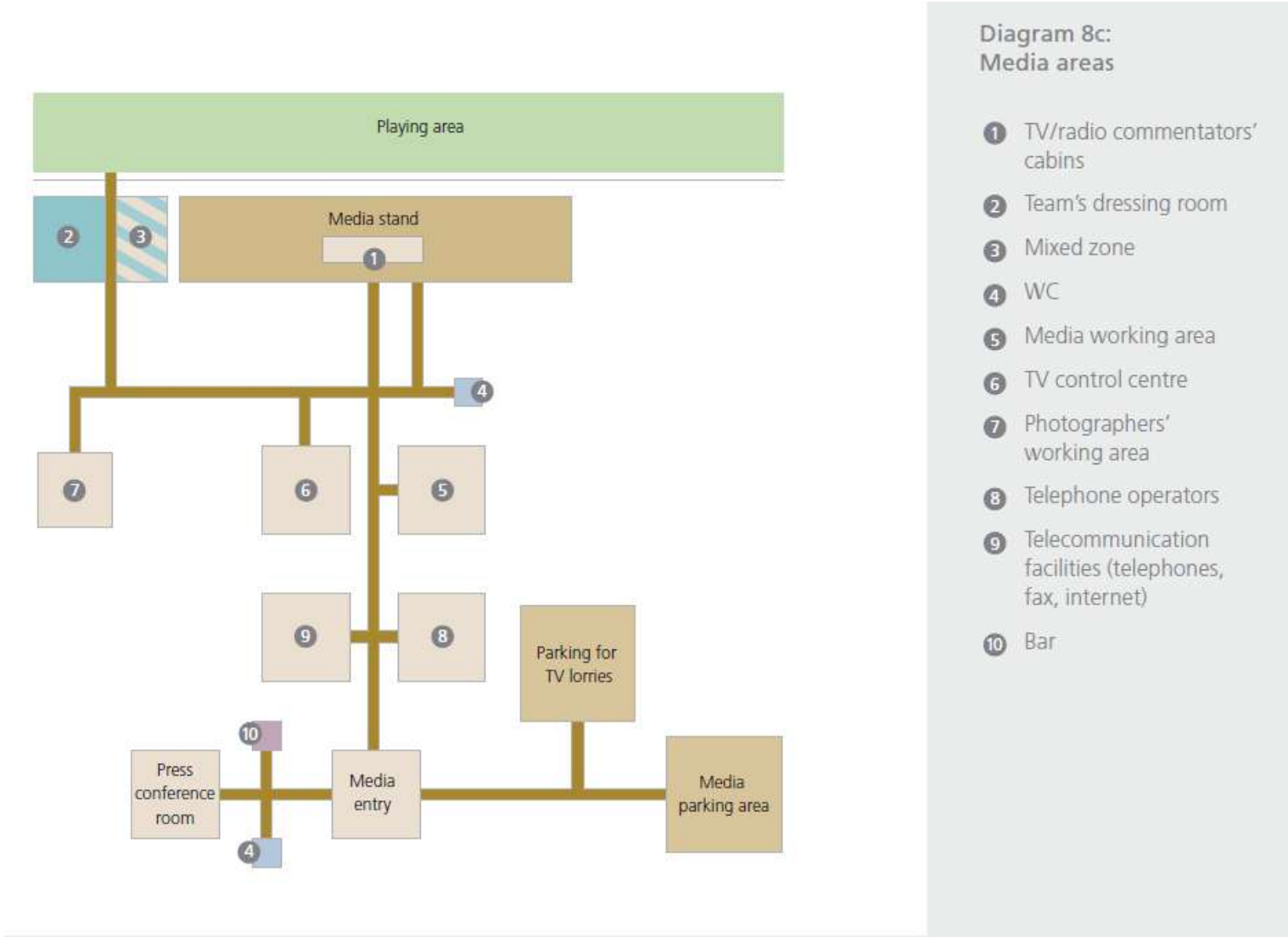
### Example Team Locker Room



(FIFA, 90)

Media:

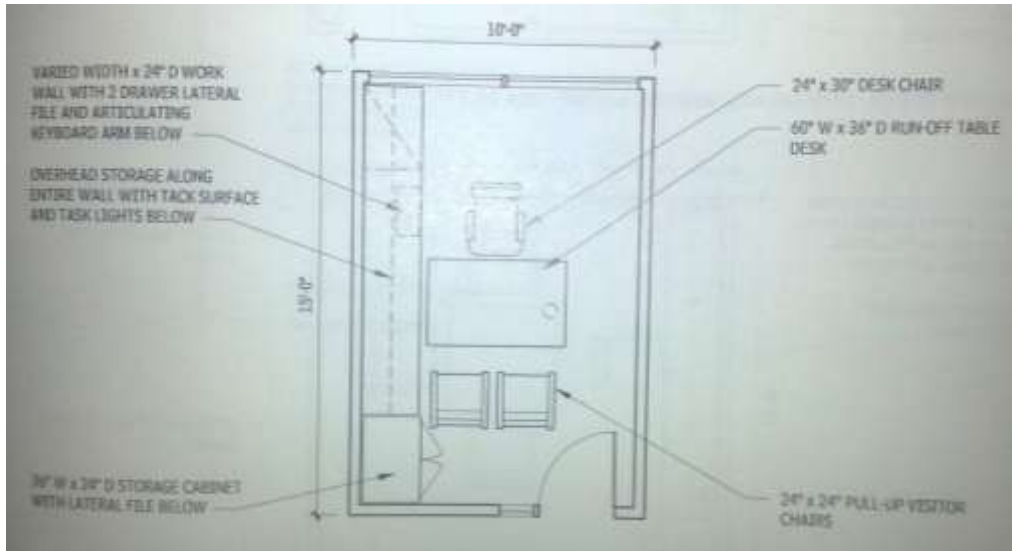
**Circulation** The following diagram shows a generic layout for media spaces.



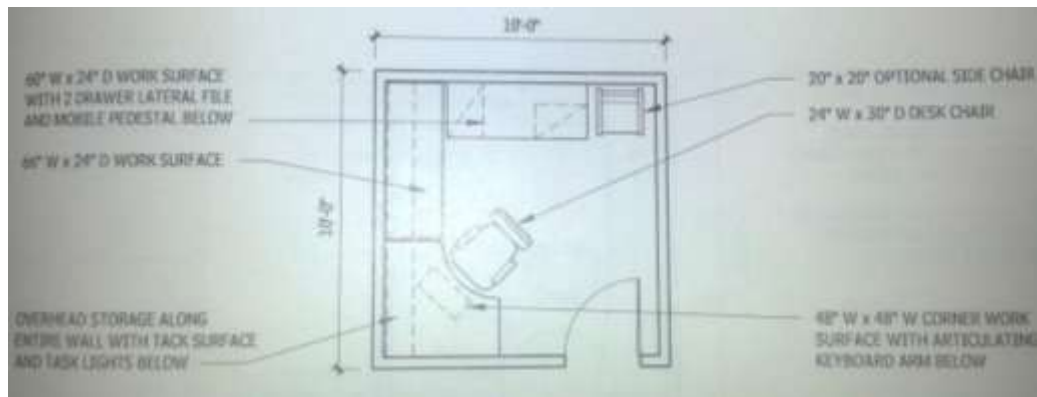
(FIFA, 74)

## Offices

The following layouts show typical office layouts.



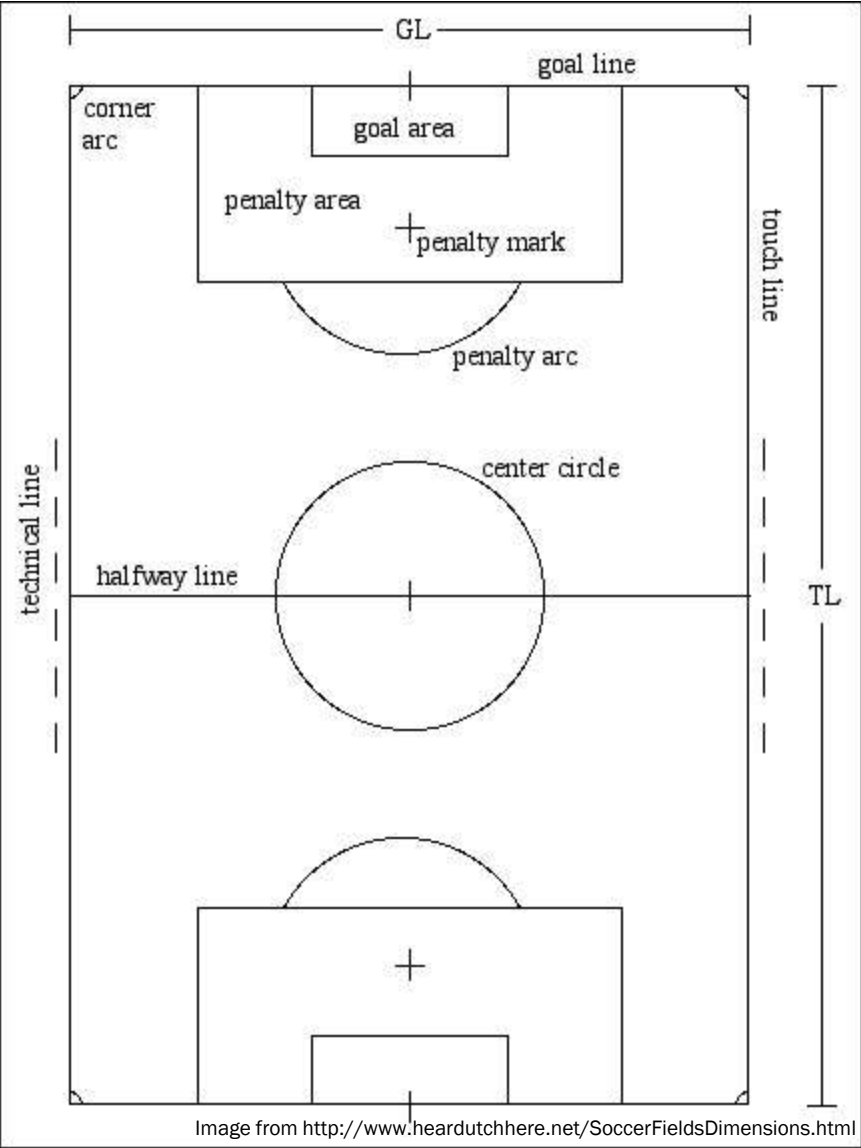
(AGS, 567)



(AGS, 567)

Pitch Configuration

Soccer Field



Dimensions

- TL=120 yards
- GL=75 yards (Stadia, 86)

Rugby Field

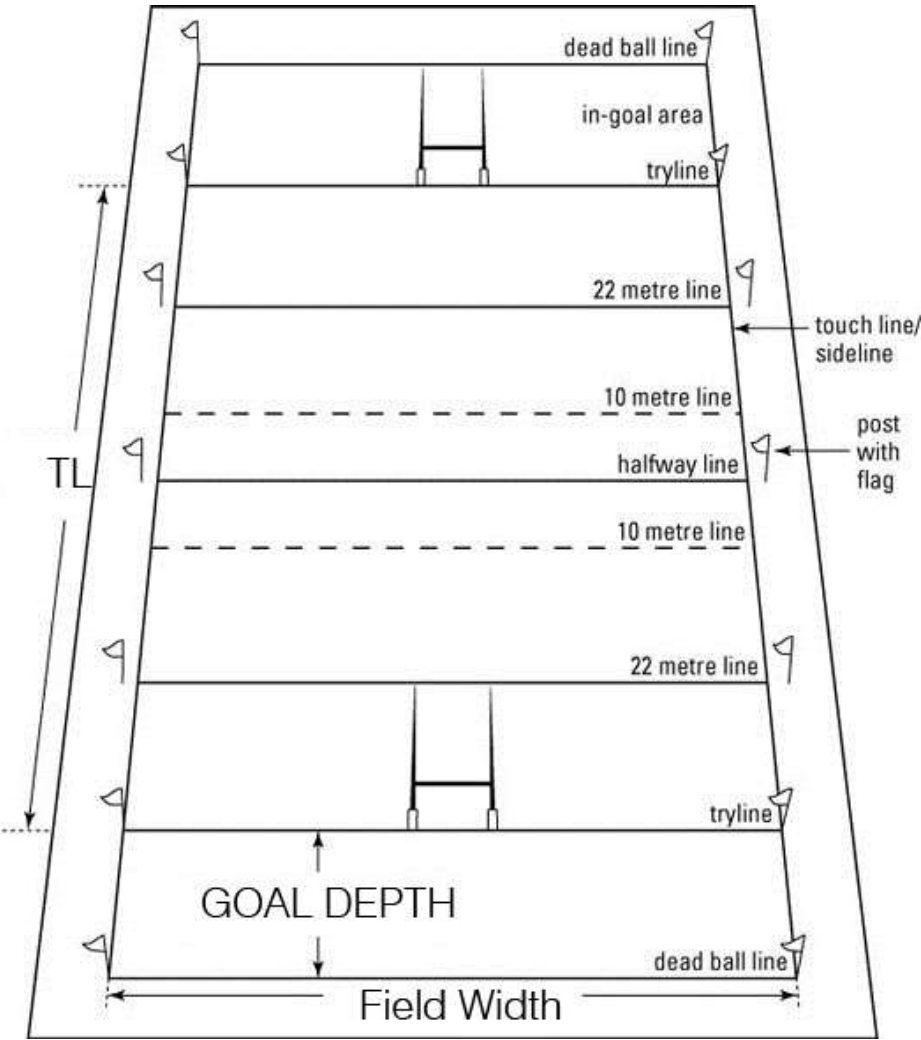


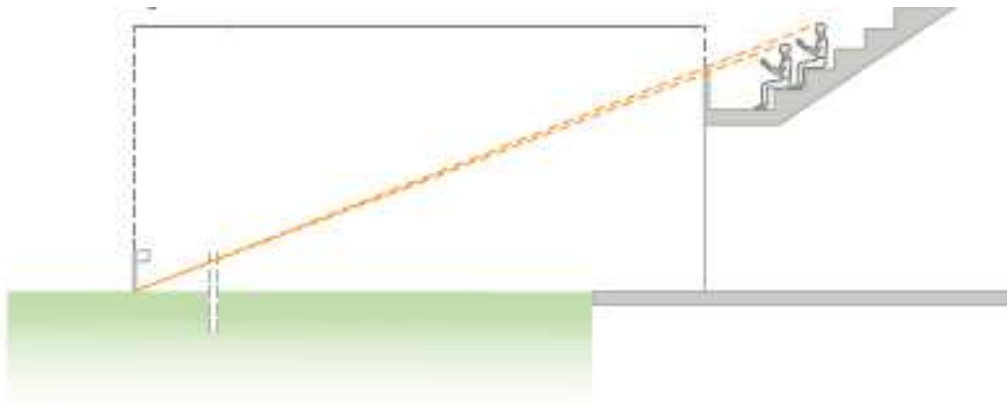
Image from <http://www.athleticfieldmarker.com/docs/images/RugbyFieldDimensions.jpg>  
**Dimensions**

- TL=110 yards
- Goal Depth=7 yards (each end)
- Field Width= 75 yards (Stadia, 88)

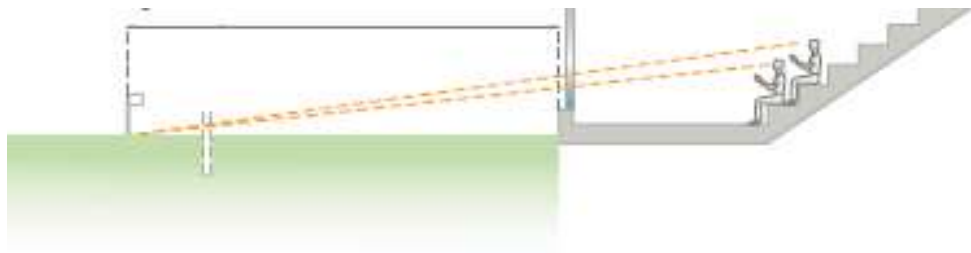
**Pitch Configuration- Field Placement**

Playing Field should be place:

- 20 to 28 from first row to touchline (not including track)



Raised seating  
Compatible with sight-lines

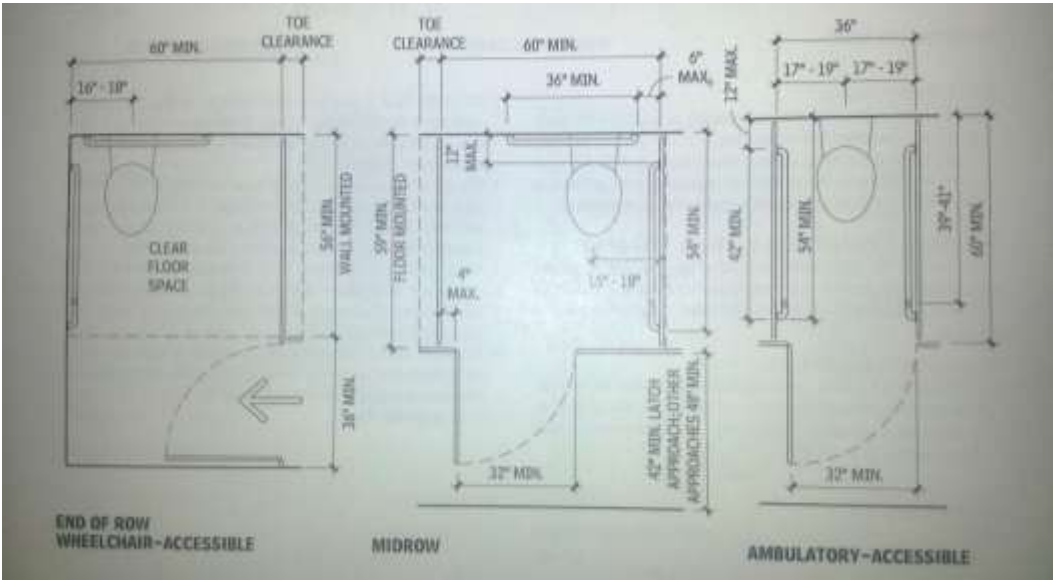


Fences or screens  
Compatible with sight-lines

(FIFA, 82)

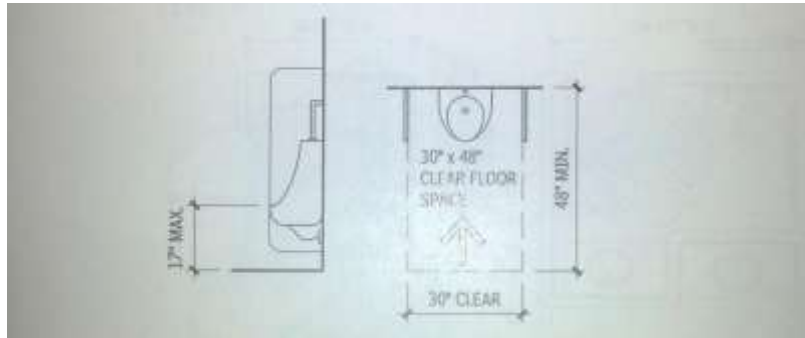
Restrooms -ADA

ADA Restrooms These diagrams so the required sizes for  
- ADA restroom cubicles, lavatories and urinals.



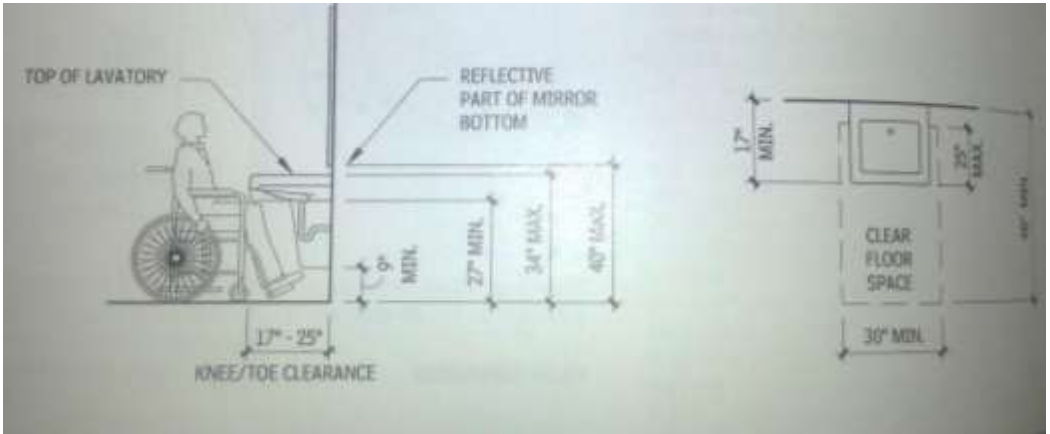
Cubicles

(AGS, 916)



Urinals

(AGS, 916)



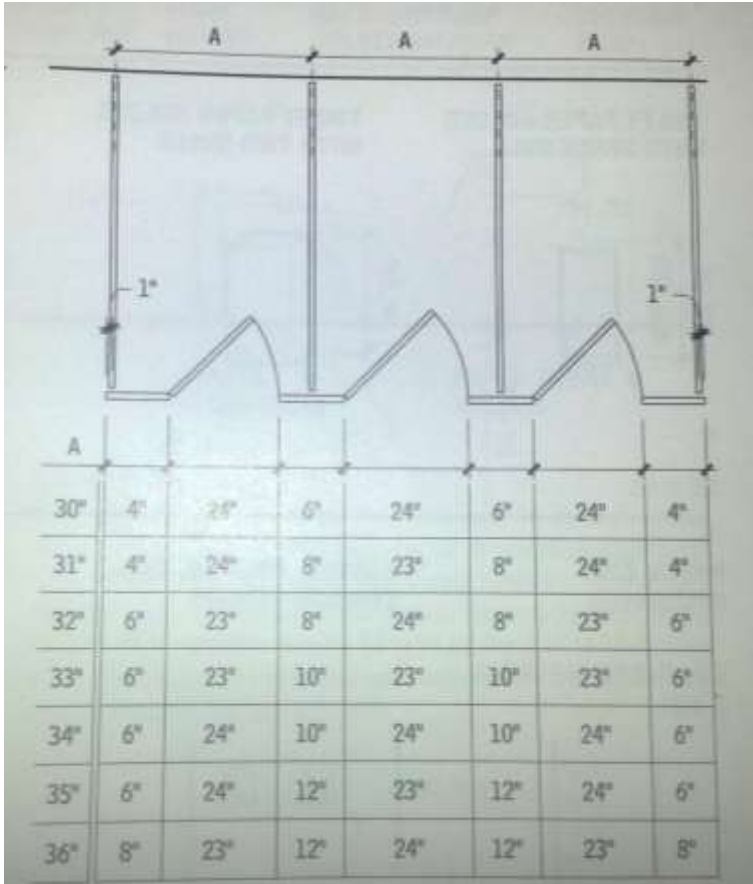
Lavatories

(AGS, 916)

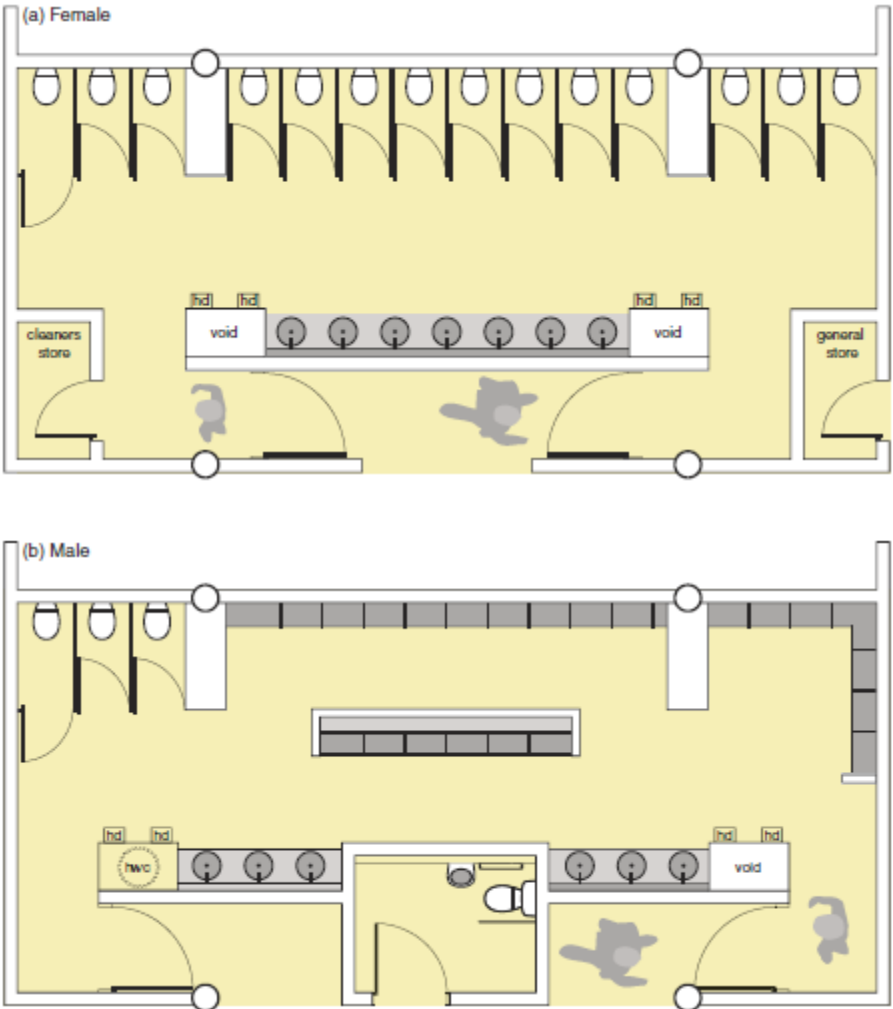
Restrooms -Public

**Public Restrooms** The diagrams to the right show an example of a men's and women's stadium restroom.

The image below shows stand sizes for restroom cubicles.



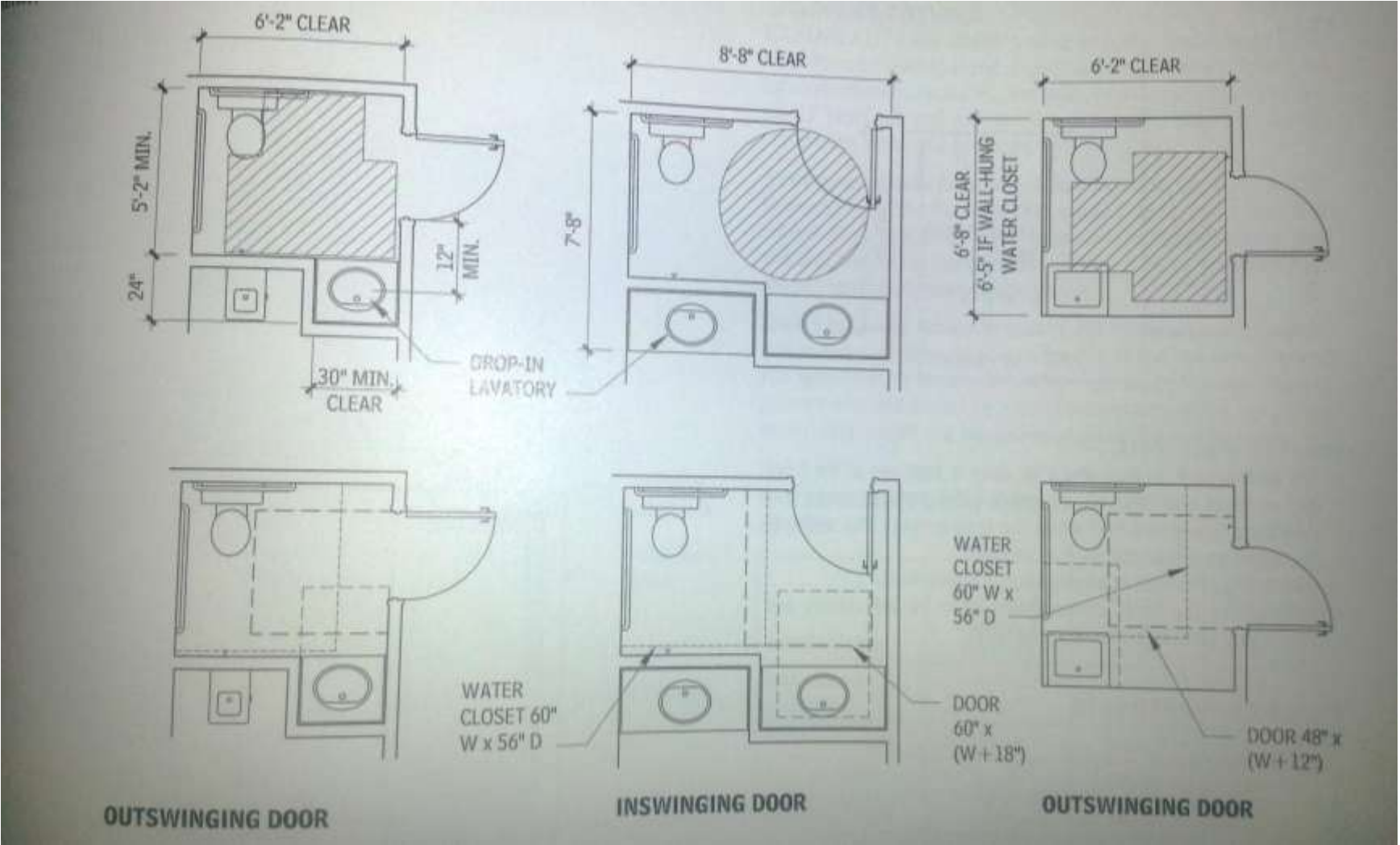
(AGS, 307)



(Stadia, 182)

**Restrooms -Single User**

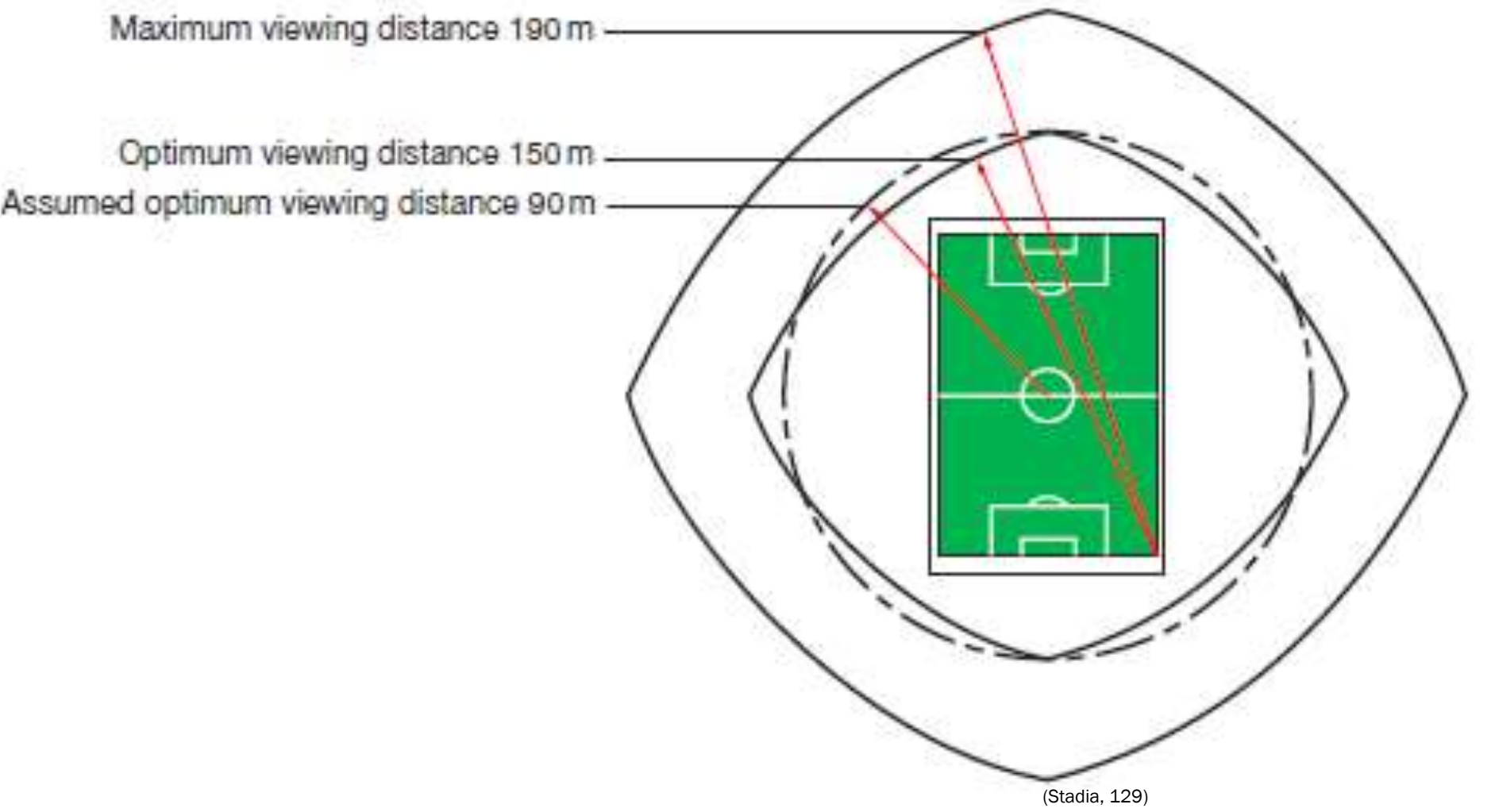
**Suite Restrooms and Other Single Occupant:** The following diagrams show the requirements for an accessible single person bathroom.

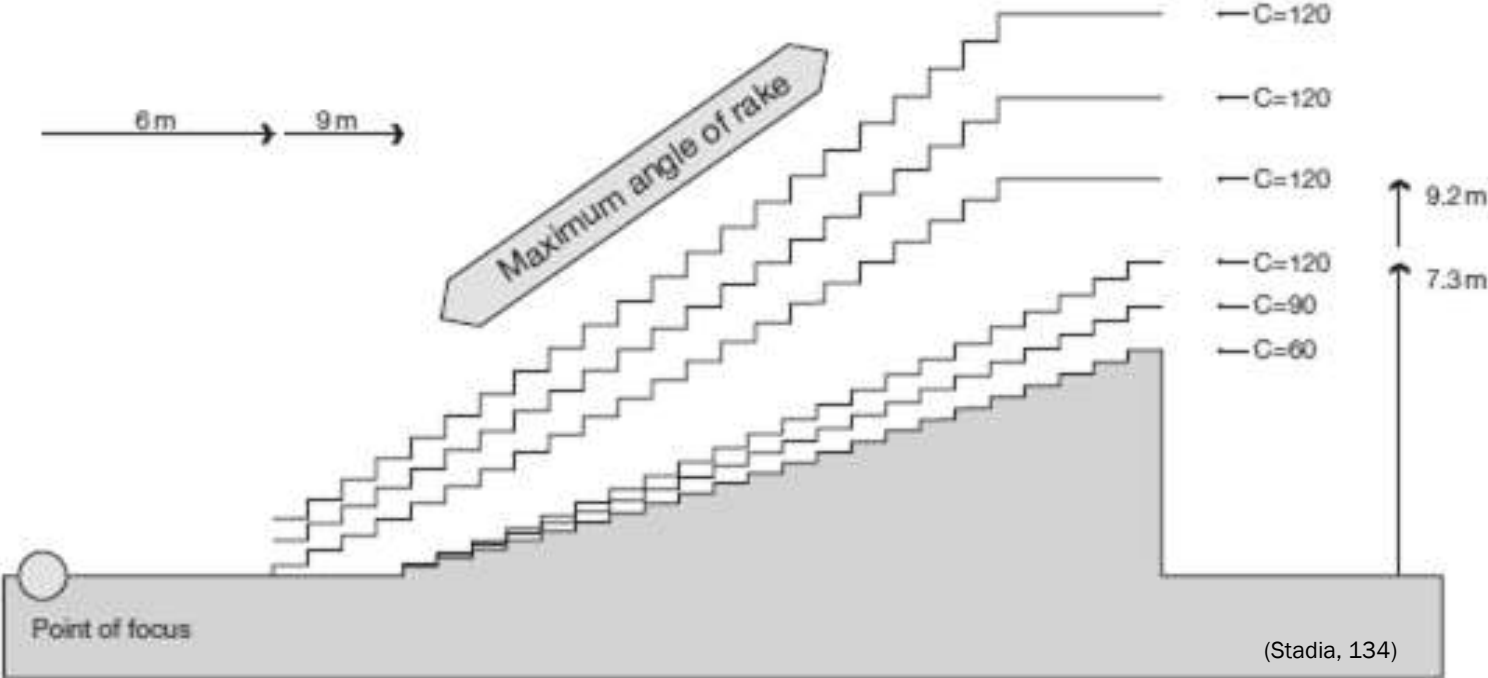


(AGS, 915)



Seating Bowl- Optimal Viewing Distance





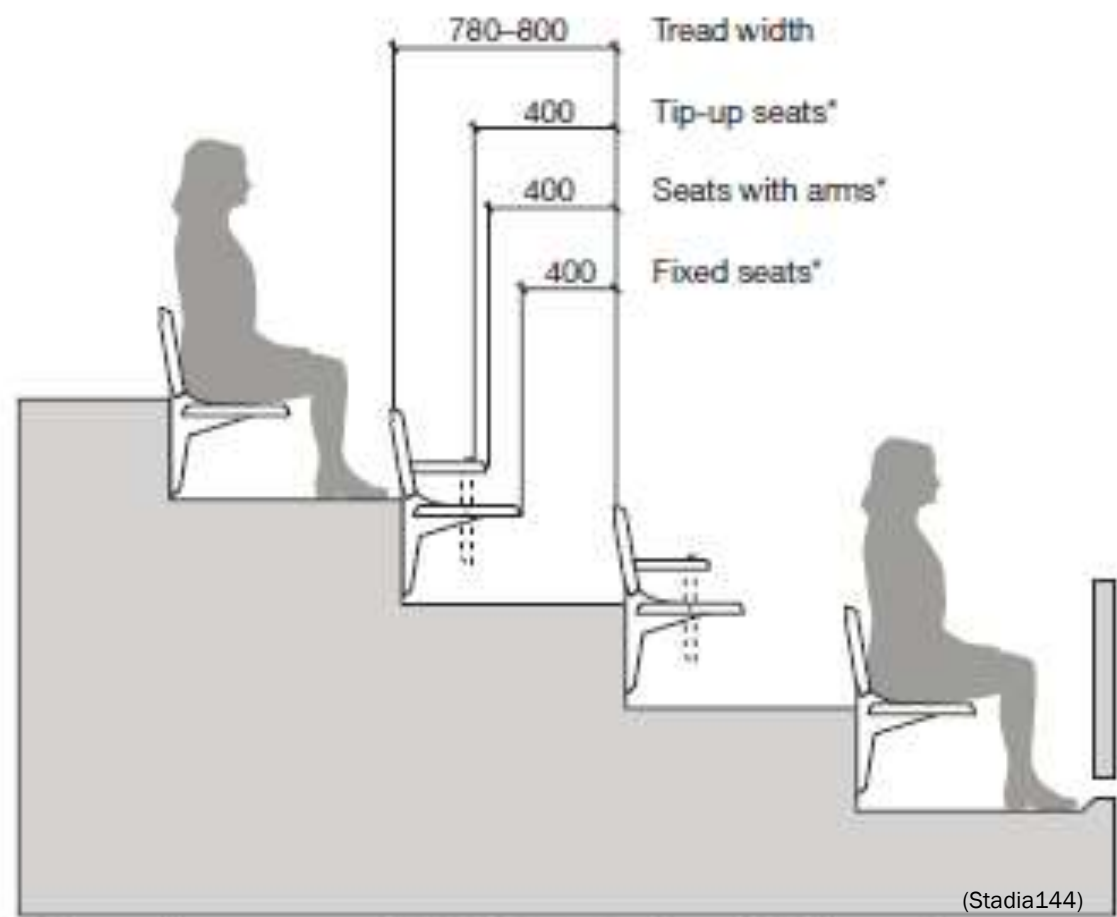
Quality of vision is improved by increasing the heights of seats above pitch level; and by bringing seats closer to the pitch

**Angle of rake** Choosing a stadium profile that minimizes the distance between spectators and playing field may give a rake that is too steep for comfort or safety. It is generally accepted that an angle of rake steeper than 34 degrees (approximately the angle of a stair) is uncomfortable and induces a sense of vertigo in some people as they descend the gangways, even if regulations in some countries do allow steeper angles. In Britain the Guide to Safety at Sports Grounds (see Bibliography), also known as the ‘Green Guide’, recommends a maximum angle of 34 degrees. In Italy up to 41 degrees is allowed, but this extremely steep rake is usually found only towards the backs of the upper tiers. Handrails are then provided in front of each row of seats for safety and to counteract the sense of vertigo.

(Stadia, 134)

Seating Bowl- Row Design

**Rows:** Each block of seating will be divided in to rows and sections, the graphics to the left indicate the width (in mm) of the row and and maximum number of seats per row,

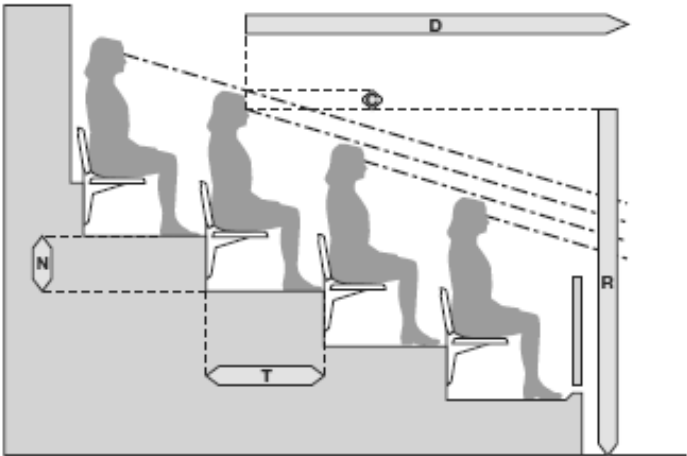


\* Clear walkway measured to furthest protruding point of the seat. (in mm)

Country	Seats		
	Maximum number of seats per row	Minimum seat dimensions	
		Width (mm)	Depth (mm)
USA	22 seats	450	762 (with back)

(Stadia, 140)

Seating Bowl- Viewing Angle



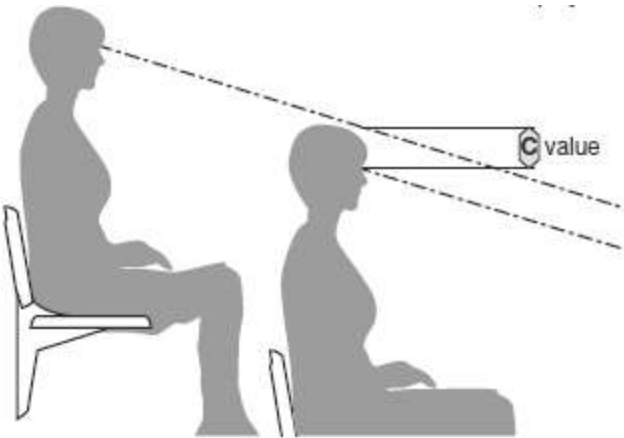
(Stadia, 133)

The desired viewing angle can be determined by using the following formula:

$$N = \frac{(R + C) \times (D + T)}{D} - R$$

- where:  $N$  = riser height;  
 $R$  = height between eye on 'point of focus' on the playing field;  
 $D$  = distance from eye to 'point of focus' on the playing field;  
 $C$  = 'C' value;<sup>1</sup>  
 $T$  = depth of seating row.

(Stadia, 132)



(Stadia, 132)

**'C' value** is the assumed distance between the sightline to the playing area (or activity area), and the center of the eye of the spectator below. In general 150mm would be an excellent design value, 120mm very good, and 90mm reasonable. 60mm is generally regarded as an absolute minimum for most situations, with spectators able to see mostly between the heads of the people in front or by craning their necks. For new design a 'C' value of 90mm is an ideal minimum.

(Stadia, 132)

## Seating Facilities

**Club enclosures:** are ‘exclusive’ sections or levels of the general stadium with their own restaurants, bars and toilets, and very comfortable seating, catering for affluent patrons who are willing to pay a premium for superior facilities but not prepared to commit themselves to 10 or 20 individual places as expected of a private box-holder. They are likely to be found mainly in larger stadia. Since the use of such facilities will vary from one match to another these areas should be designed so that they can fulfill other functions on non-event days, or when they are not being used for a particular event.

Each club area will have its own bar and perhaps kitchen facilities, depending on the catering organization of the particular stadium. It may have its own individual toilets, which should not be combined or shared with other users. Accommodation may be needed for three types of users. The areas vary greatly from venue to venue, but good spatial allowances should be made, for instance 1.5 to 2.0m<sup>2</sup> per person. (Stadia, 152)

**Seat Hierarchy:** The chart to the right displays some typical seating area types, and what those areas should provide.

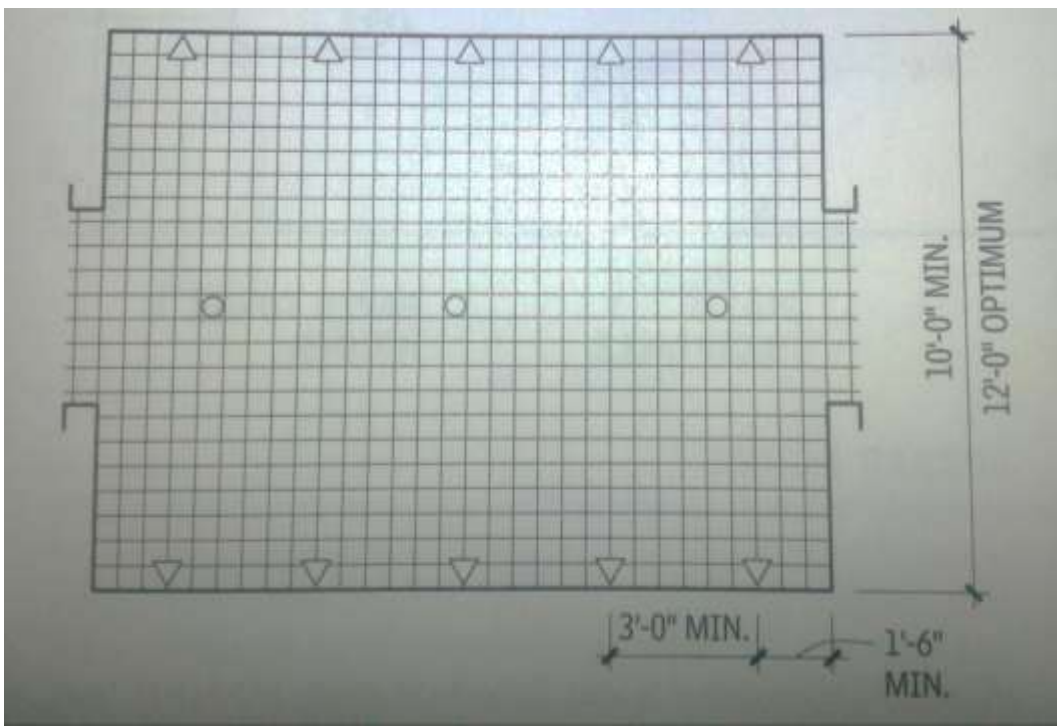
<b>1 Private boxes</b>	Self-contained private dining and bar facilities	10 to 20 person boxes 1–2% spectators 3 year contract Tread 850mm padded and arms
<b>2 Executive suites</b>	Group private dining and shared bar	4–20 person suites 1–2% spectators 1–3 year contract Tread 850mm padded and arms
<b>3 Club seating and dining</b>	Group seating and group dining with shared bar and lounge	Tables of 2–6 in restaurant 1–2% spectators 1–3 year contract Tread 800mm padded and arms
<b>4 Club seating</b>	Group seating with shared bar and lounge facilities	Lounge self-contained 2–4% spectators 1–3 year contract Tread 800mm padded and arms
<b>5 Members seating and dining</b>	Group seating with shared dining and bar facilities	Dining and bar self-contained 1–2% spectators season ticket plus dining Tread 760mm with arm rests
<b>6 Members seating</b>	Group seating with shared bar facilities	Bar part of 5 above 2–5% spectators season ticket plus Tread 760mm with arm rests
<b>7 Public seating (several standards)</b>	Seating with public bars and concession areas	Wide range of concessions 50% spectators match or season ticket Tread 760mm with backs
<b>8 General seating</b>	Bench seating with public bars and concession areas	Range of concessions 5–15% spectators match or season ticket Tread 700mm no backs
<b>9 ‘Tennis’ boxes</b>	Groups of seats (say 8–12) in self-contained areas	Used in the Telstra Stadium. Equipped with cool box and refreshments delivered
<b>10 Standing terrace (some stadia)</b>	Standing areas with public facilities (more stewarding might be needed)	Range of facilities 5–15% spectators match or season ticket Tread 380mm

**Table 13.1** Range of viewing standards that might be provided in a stadium

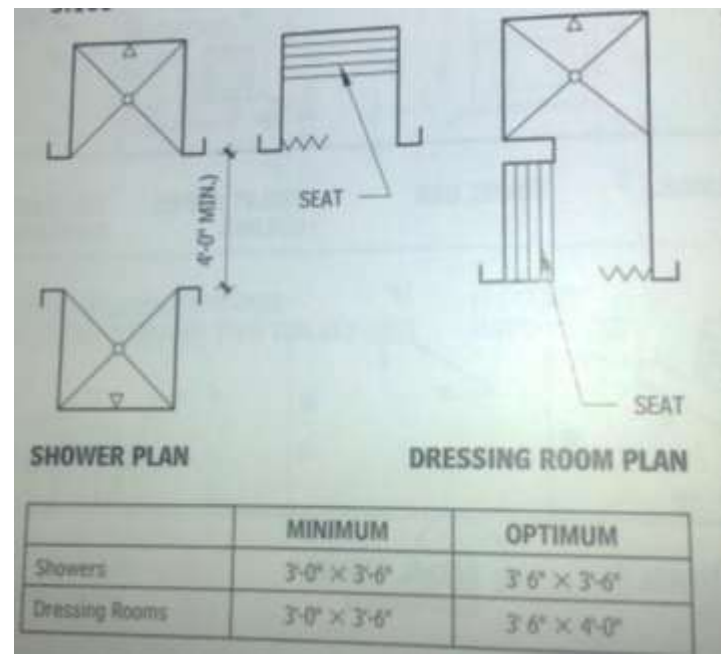
(Stadia, 148)

Showers

The following diagrams show sizes for group showers as well as individual cubicle showers. The group shower can possibly be used in the pro locker rooms, other shower areas should be individual stalls in order to maximize the future use potential.



Group Shower (AGS, 310)



Individual Shower (AGS, 310)

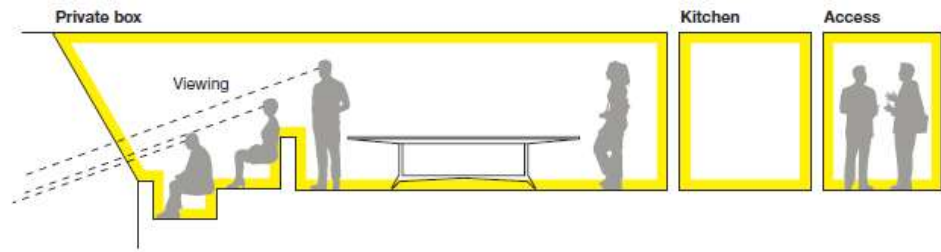
	MINIMUM	OPTIMUM
Showers	3'-0" x 3'-6"	3'-6" x 3'-6"
Dressing Rooms	3'-0" x 3'-6"	3'-6" x 4'-0"



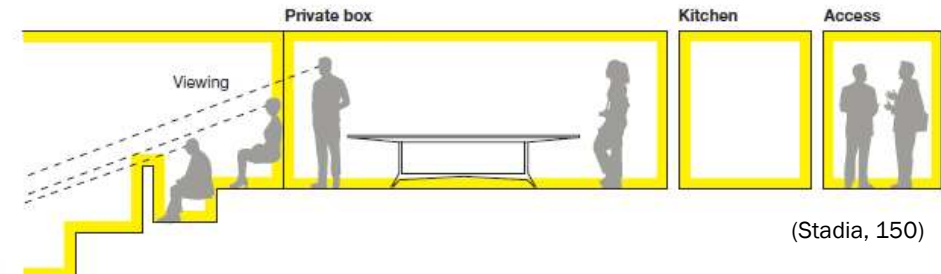
Suites

**Suites:** The program divided the suite into suite seating and the suite itself. The suite seating is referring to the tiered area closed to the field. The suite is referring to the area with tables adjacent to the tiered seating. The suite can be wither entirely enclosed or allow the suite seating to be connected to the seating bowl

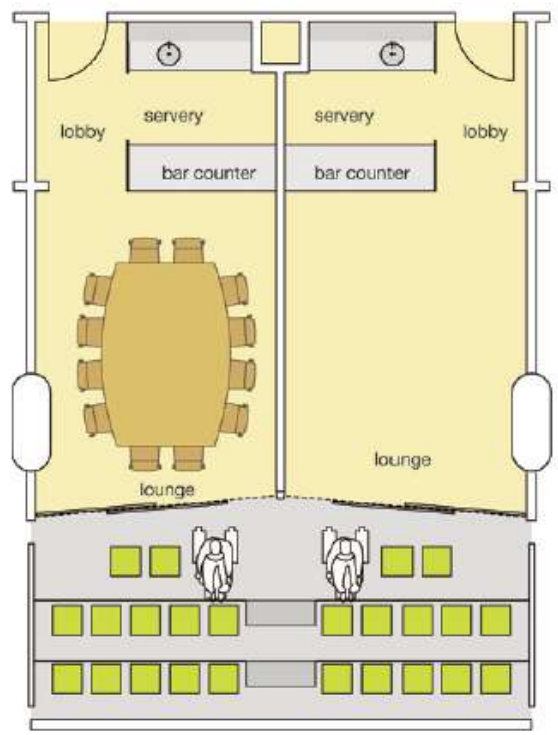
**Type A**  
**Advantages:** Complete privacy and comfort  
**Disadvantages:** Separation from the atmosphere of the ground



**Type B**  
**Advantages:** Privacy maintained but users see event as spectators  
**Disadvantages:** Separation between viewing and dining



(Stadia, 150)



(Stadia, 151)

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