ASSIGNMENT

12:05

Car Parking Example.

Submitted to;

Dr. Hanif Aziz.

Submitted by;

Ahsen Ali 11-IE-06

Mohsin Tariq 11-IE-22

Shahbaz Farid 11-IE-35

U.E.T Taxila.

ASSIGNMENT.

car parking.

Depth = Length = 184 ft

Width = 101 ft.

At $\theta = 90°$

From Table

W4

Module width = 66 ft.

W1

Module width = 48 ft

No of modules;

2 modules of W4 and one module of W1.

$66 \times 2 = 132$ ft

and

$1 \times 48 = 48$ ft

$132 + 48 = 180$ ft < 184

So

Depth requirement is OK

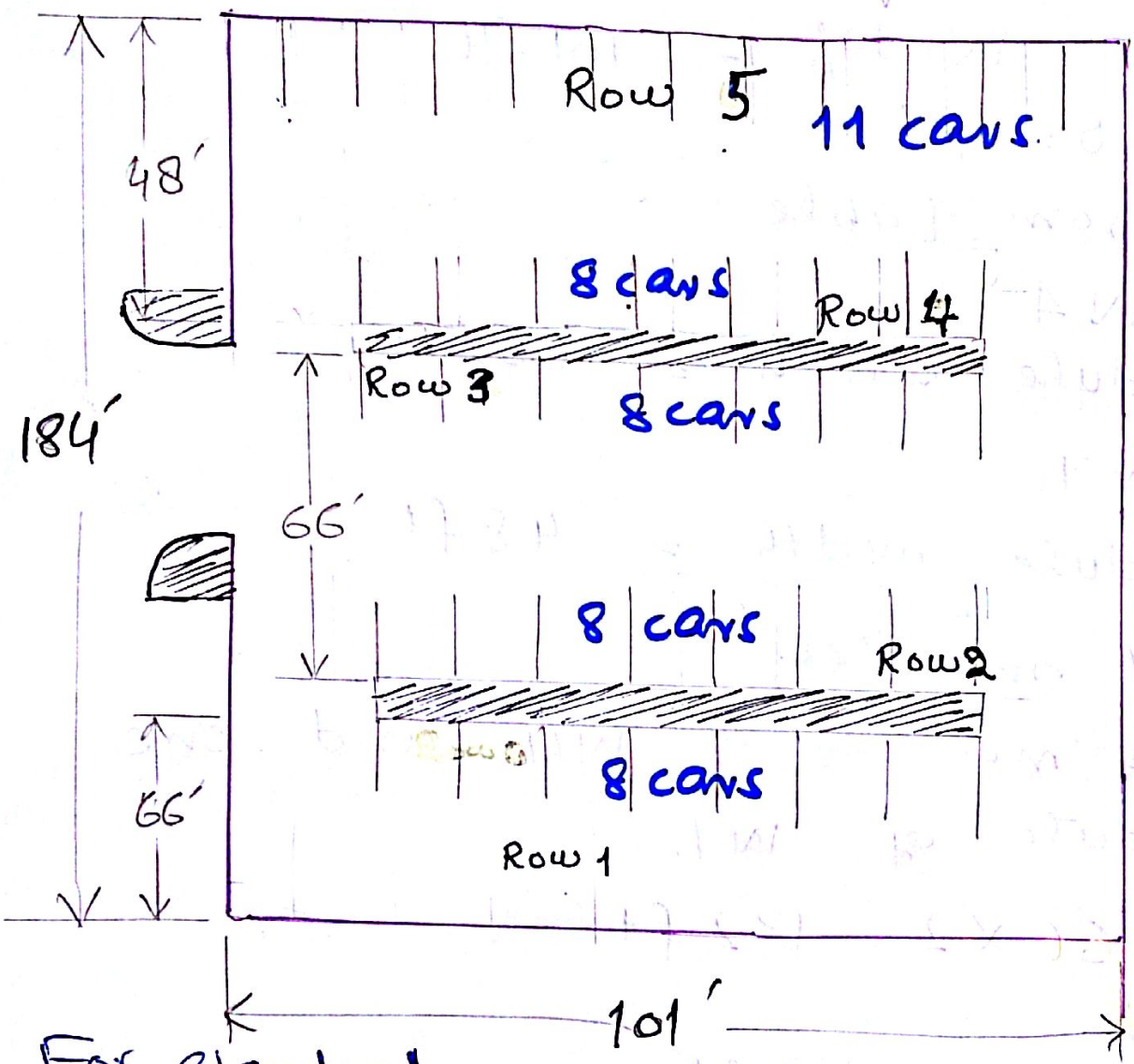
Now

For standard car module.

Stall width = 8' 6" = 8.5'

$$PW = \frac{SW}{\sin\theta} = \frac{SW}{\sin 90^\circ}$$

$$PW = \frac{8.5}{1} = \boxed{8.5'}$$



For standard cars at W4-

$$\text{no. of cars} = \frac{101}{8.5} \times 2 \times 2 = 47 \text{ cars}$$

For standard cars at W1:

$$\text{no. of cars} = \frac{101}{8.5} \times 1 = \boxed{11 \text{ cars}} \quad \text{Row 5}$$

Total no of possible cars = 47 + 11 = 58 cars

As we leave the space of 15' from side to side of w4 module.

So

Total no of possible cars $= \frac{101-30}{8.5} = 8$ cars

In Row 1 $\Rightarrow$ # of cars = **8 cars.**

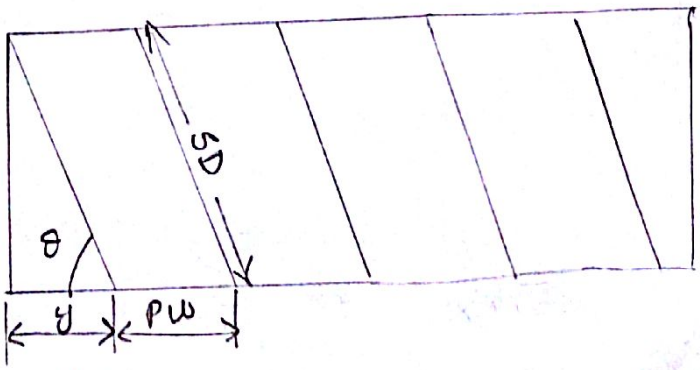
Same cars are parked in Row 2 Row 3, Row 4.

$\Rightarrow$ Total no of possible cars;

$= 8+8+8+8+11 = 43$ cars.

Now.

when $\theta = 60°$.



$SD = 16$ ft.

$PW = \frac{SW}{\sin\theta} = \frac{8.5}{\sin 60°} = 9.8$

Module depth = y + (no of stalls x PW)

$y = SD \cos 60° = 16 \times \cos 60° = 8$

no of stalls $= \frac{101-8}{9.8} = 9.48$

So no of cars = 9 cars.

For Row 5, no of cars = 9 cars.

For Row 1, 2, 3, 4.

No of cars $= \frac{101 - 30 - 8}{9.8} = 6$ cars.

So total no of cars park

$= 6 + 6 + 6 + 6 + 9 =$ **33 cars**

12:10

ASSIGNMENT.

CAR PARKING

SUBMITTED TO:

SIR WASEEM.

SUBMITTED BY:

SHEHROZ AZHAR:
11-IE-18.

JUNAID HASSAN.
11-IE-36.

SUMMYIA SAMAR.
11-IE-46.

CAR PARKING

MEASURED LENGTH;

width = 100 ft.

Depth = 184 ft.

AT $\theta = 90°$:

FOR W4;

Module width = 66"

NO. OF MODULES:

$66 \times 2 = 132"$

Hence 2 Modules can be designed along the given Module depth.

TOTAL NO. OF CARS IN ONE MODULE:

$\frac{100}{8.5} \times 2 = 23$ cars.

TOTAL CARS IN 2 MODULES:

$\frac{100}{8.5} \times 2 \times 2. = 47$ cars.

Remaining depth = 184 − 132.

= .52 ft.

for W1,

Module width = 48 ft.

⇒ Total Modules :

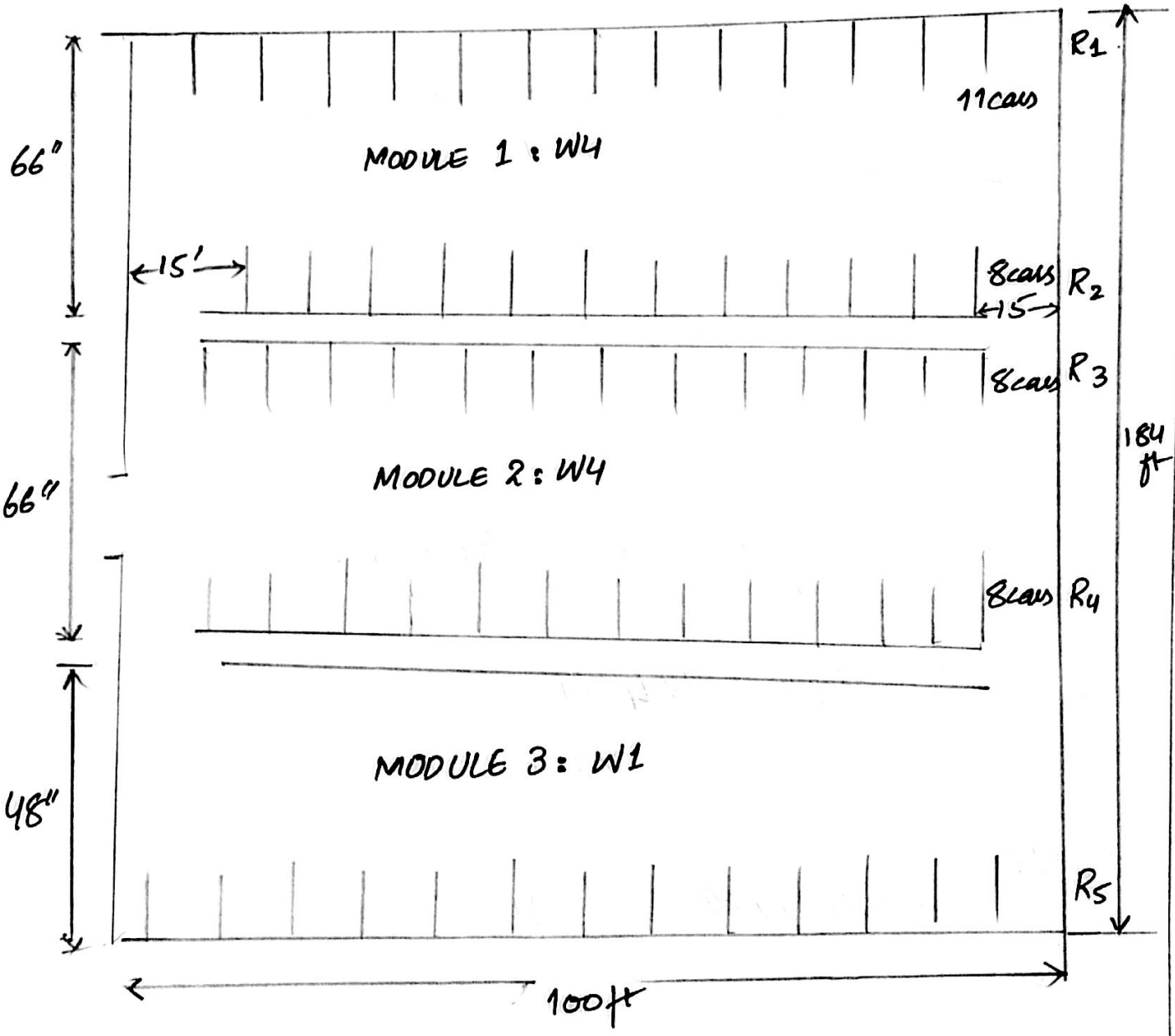
2 W4 :

1. W1 :

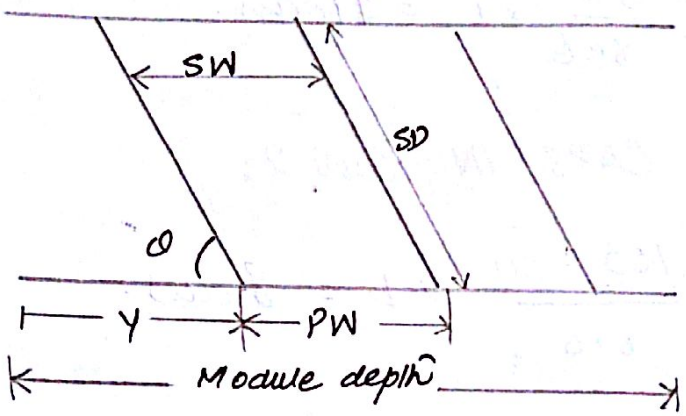
NO. OF CARS IN W1 MODULE :

$\frac{100}{8.4}$ = 11 cars :

Total Cars = 47 + 11 = 58 cars.



NOW At $\theta = 60°$



$$PW = \frac{SW}{\sin\theta} \quad \text{——A}$$

$$PW = \frac{8.5}{\sin 60°}$$

$$PW. = 9.81$$

$$Y = SD \cos 60°.$$

$$= 16 \cos 60.$$

$$= 8'$$

FOR W4:

Module width = 51.8 ft.

NO. OF MODULES:

$51.8 \times 2 = 103.6$ ft

$51.8 \times 3 = 155$ ft

3 Modules can be designed.

MODULE DEPTH:

Module depth = Y + (no. of slabs) x PW =

NO. OF CARS IN ROW 1:

$$= \frac{100}{8.6} \times 1 = 11 \text{ cars.}$$

NO. OF CARS IN ROW 2:

$$\frac{100 - 30}{8.6} \times 1 = 8 \text{ cars.}$$

NO. OF CARS IN ROW 3:

$$\frac{100 - 30}{8.6} \times 1 = 8 \text{ cars.}$$

NO. OF CARS IN ROW 4:

$$\frac{100 - 30}{8.6} \times 1 = 8 \text{ cars.}$$

NO. OF CARS IN ROW 5:

$$\frac{100}{8.6} \times 1 = 11 \text{ cars.}$$

TOTAL NO. OF CARS:

$$11 + 8 + 8 + 8 + 11 = 46 \text{ cars.}$$

No. of stalls = 9 stalls.

No. of cars in Row 1, 4.

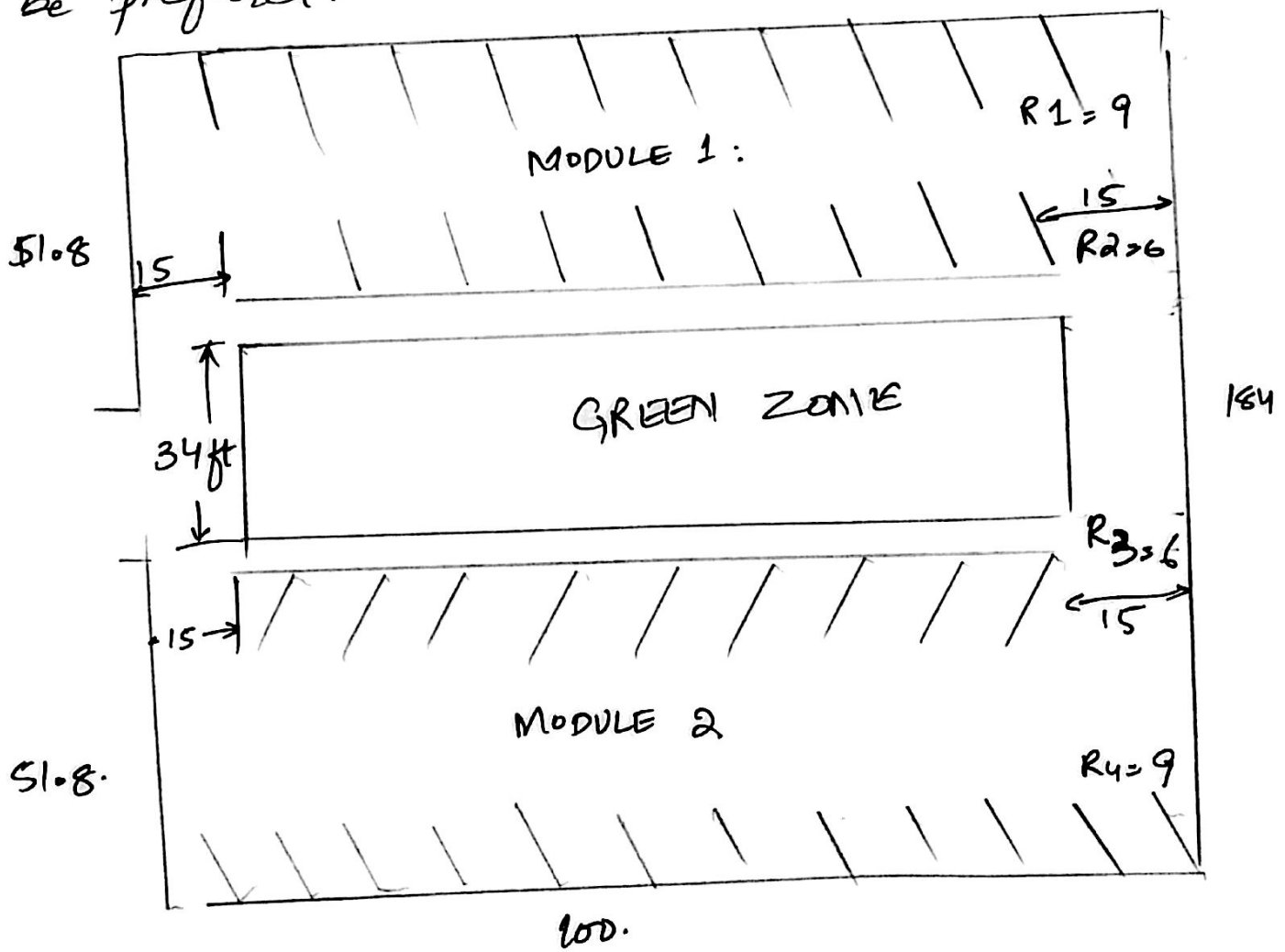
$$\frac{100-8}{9.8} = 9 \text{ cars}.$$

No of cars in Row 2, 3

$$\frac{100-8-30}{9.6} = 6 \text{ cars}.$$

Total Cars = 18 + 12 = 30. cars.

∴ No of cars for 90° are greater so that will be preferred.



12:05

ASSIGNMENT

(PARKING LOT)

GROUP # 08

11-IE-60

11-IE-59

11-IE-48

SUBMITTED TO:-

DR. HARIS AZIZ

IED UET TAXILA

ASSIGNMENT

Car Parking

-length is = 184 ft

width is = 101 ft

we take length as a depth

At an angle of 90°

From Table W4 two sided lanes module is selected.

Module width (W_4) = 66 ft

Module width (W_1) = 48 ft

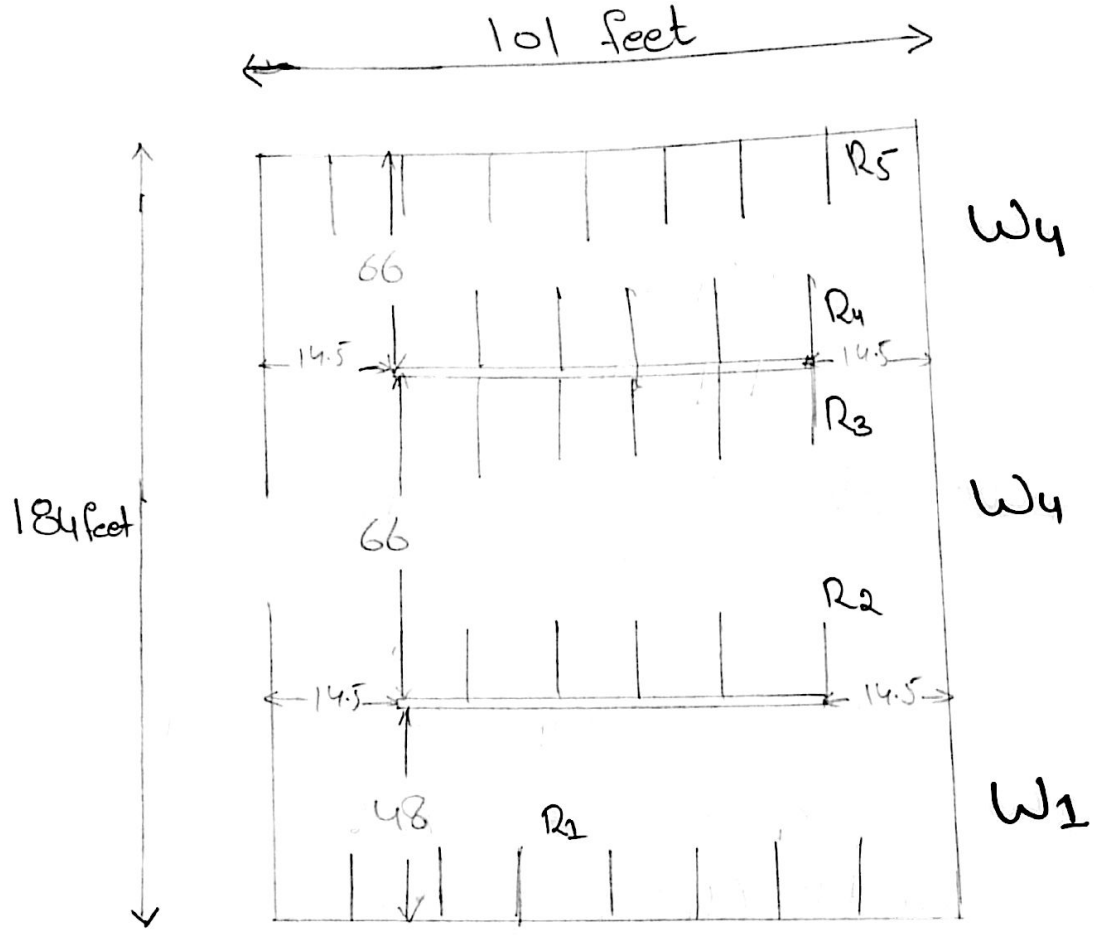
No of modules is given by

2 modules of W_4 and one module of W_1 is selected.

$66 \times 2 + 1 \times 48 = 180$ feet

So, $180 < 184$, Hence depth is O.K.

So, 3 modules are required module in given depth



For Standards cars at W_4

No of Cars = $\frac{101}{8.5} \times 2 \times 2$ = 47 Cars

For Standard Cars at W_1

No of Cars = $\frac{101}{8.5} \times 1$ = 11 Cars

Total no of possible cars = 47 + 11

= 58 Cars

Now, we will calculate the no of cars in each row.

=> In Row 1 (W1 Module)

no of cars $= \frac{101}{8.5} = 11$ cars

=> In Row 2

no of cars $= \frac{101 - 29}{8.5} = 8$ cars

=> no of cars in Row 3, Row 4 is also the same as the cars are parked in Row 2.

Row 2 = Row 3 = Row 4 = 8 cars

=> In Row 5

no of cars $= \frac{101}{8.5} = 11$ cars

Total no of cars actually parked

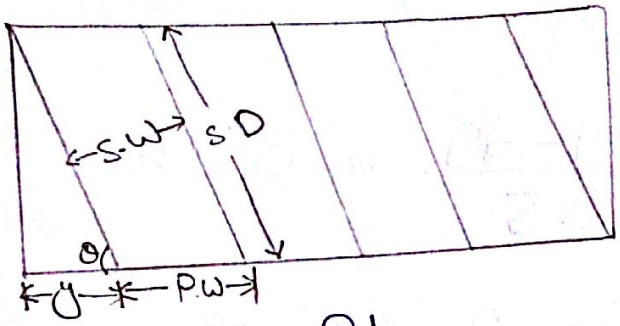
$= 11 + 8 + 8 + 8 + 11$

$=$ {46 cars}

Parking Of Cars At An Angle 60°

Solution

when $\theta = 60°$



$SD = 16$ ft

$$P.W = \frac{S.W}{\sin\theta} = \frac{8.5}{\sin 60°} = 9.8$$

Module depth = y + (no of stalls × P.W)

$y = S.D \cos 60° = 8$

$y = 8$

$$\text{no of stalls} = \frac{101 - 8}{9.8} = 9.48$$

9 cars are parked in Row 1

No of Cars $= \frac{101-89-8}{9\ 8} = 6$ cars

So total no of cars that are parked is given below.

$= 9+6+6+6+9 = 36$ cars.

ASSIGNMENT

Group # 07

M. Asdullah 11-IE-25

Naseem Abbas 11-IE-51

Jamshaid Zafar 11-IE-52

CAR PARKING LAYOUT DESIGN FOR SPORT Complex

Let Suppose dimension of sports complex of UET Taxila is

width = 180 ft

Depth = 200 ft

Taking $\theta = 90^\circ$

with the help of Table:

W_4

Module width = 66.0 ft

⇒ No. of Modules in

$66' \times 3 = 198$ ft

Hence 3 Modules can be designed along the Module depth

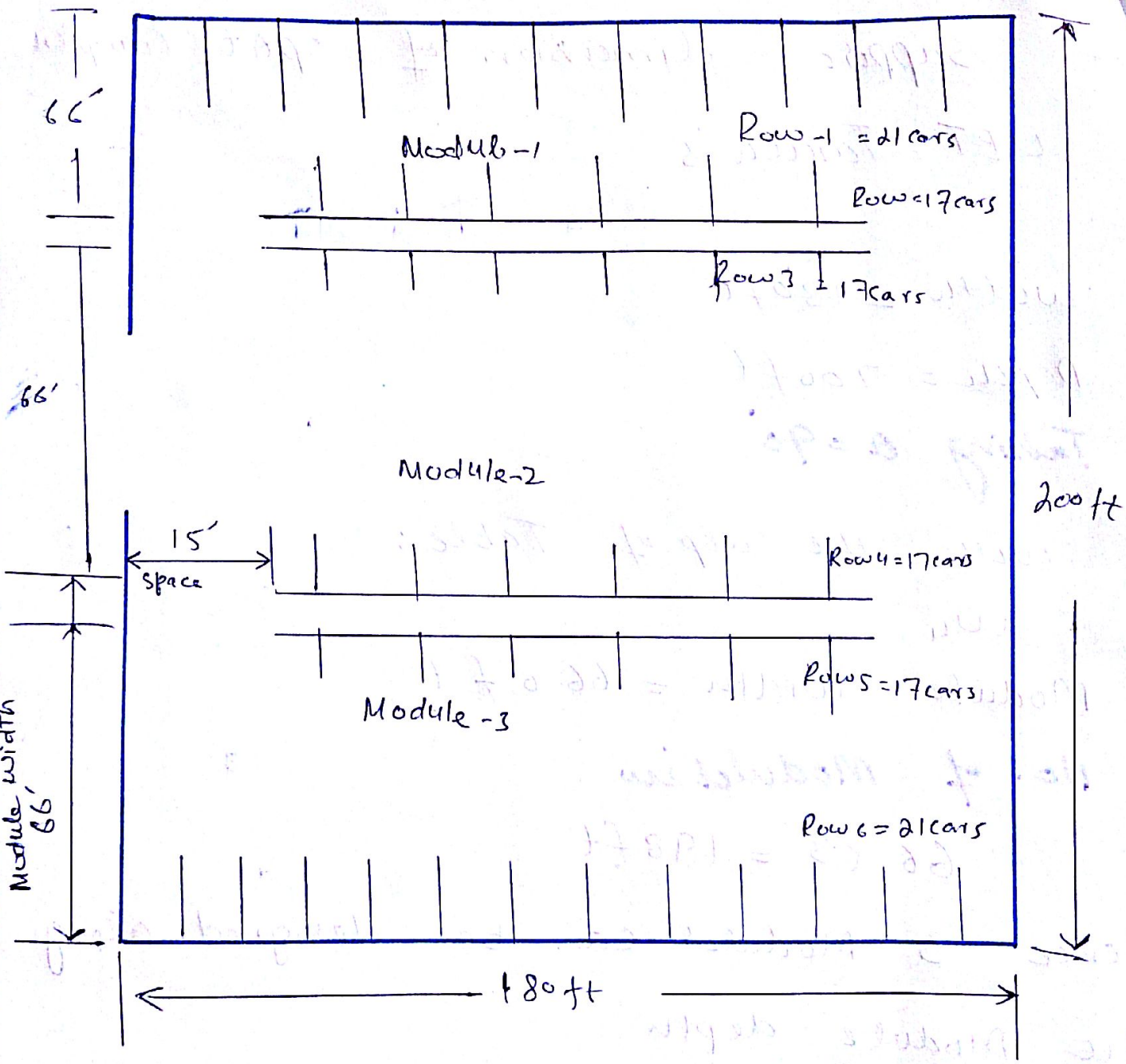
⇒ Total No. of cars in one Module:-

$\frac{180}{8.5} \times 2 = 42$ cars

⇒ Total cars in 3 Modules:

$\frac{180}{8.5} \times 2 \times 3 = \boxed{127 \text{ cars}}$

Taking $\theta = 90°$



No. of cars in Row 1:

$$\frac{180}{8.5} \times 1 = 21 \text{ cars}$$

⇒ No. of cars in Row 2:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars}$$

⇒ No. of cars in Row 3:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars}$$

⇒ No. of cars in Row 4

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars}$$

⇒ No. of cars in Row 5:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars}$$

⇒ No. of cars in Row 6:

$$\frac{180}{8.5} \times 1 = 21 \text{ cars}$$

⇒ Total No. of cars

$$= 110 \text{ cars}$$

Now, at $\theta = 60^\circ$

From Table ;

W_4

Module width = $51' \cdot 8''$

Let steel depth (SD) = 16ft

No. of Modules:-

$51'.8'' \times 3 = 155.4$ ft

Here also 3 Modules can be designed

$$PW = \frac{SW}{\sin 60^\circ}$$

$$PW = \frac{8.5}{\sin 60^\circ} = 9.8'$$

$$Y = SD \cos 60^\circ$$

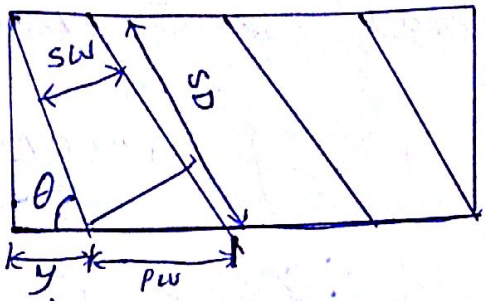
$$Y = 16 \cos 60^\circ = 8'$$

Module depth:

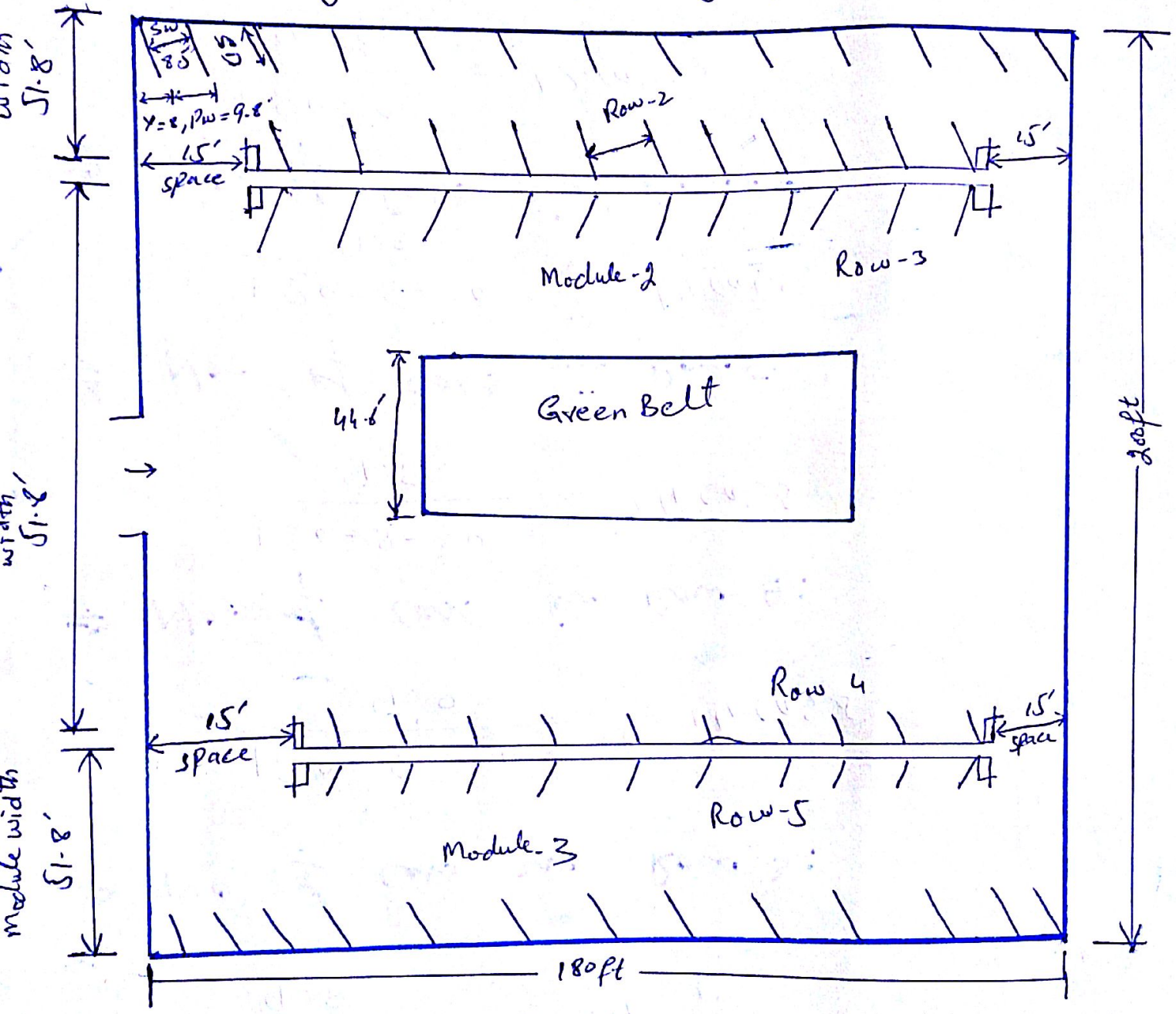
Module depth = $Y + (\text{no. of Stalls}) \times PW = 180$

no. of Stalls = Module depth $- Y/PW$

no. of Stalls = 17



⇒ Layout of Car Parking at $\theta = 60°$



⇒ No. of cars in Row 1:

$$\frac{180-8}{9.8} = 17 \text{ cars}$$

⇒ No. of cars in Row 2:

$$\frac{180-8-30}{9.8} = 14$$

⇒ No of cars in Row 3:

$$\frac{180-8-30}{9.8} = 14 \text{ cars}$$

⇒ No. of cars in Row 4:

$$\frac{180-8-30}{9.8} = 14 \text{ cars}$$

⇒ No. of cars in Row 5:

$$\frac{180-8-30}{9.8} = 14 \text{ cars}$$

⇒ No. of Cars in Row 6:

$$\frac{180-8}{9.8} = 17 \text{ cars}$$

⇒ Total No. of cars:-

$$= 90 \text{ cars}$$

at angle of 90° more cars can be parked

Car Parking Assignment

Submitted to

"Dr Haris Aziz"

Submitted by

Group 5

11-IE-43

11-IE-09

11-IE-42

Sports complex car parking Design:

We suppose the Dimensions of sports complex of UET Taxila is:

Width = 180 ft

Depth = 200 ft.

At $\theta = 90°$

From table W_4

Module width = 66.5 ft.

No of modules in

$66 \times 3 = 198$ ft.

Hence 3 modules can be designed along the module depth.

Total cars in One Module:

$\frac{180}{8.5} \times 2 = 42$ cars.

Total cars in 3 modules:

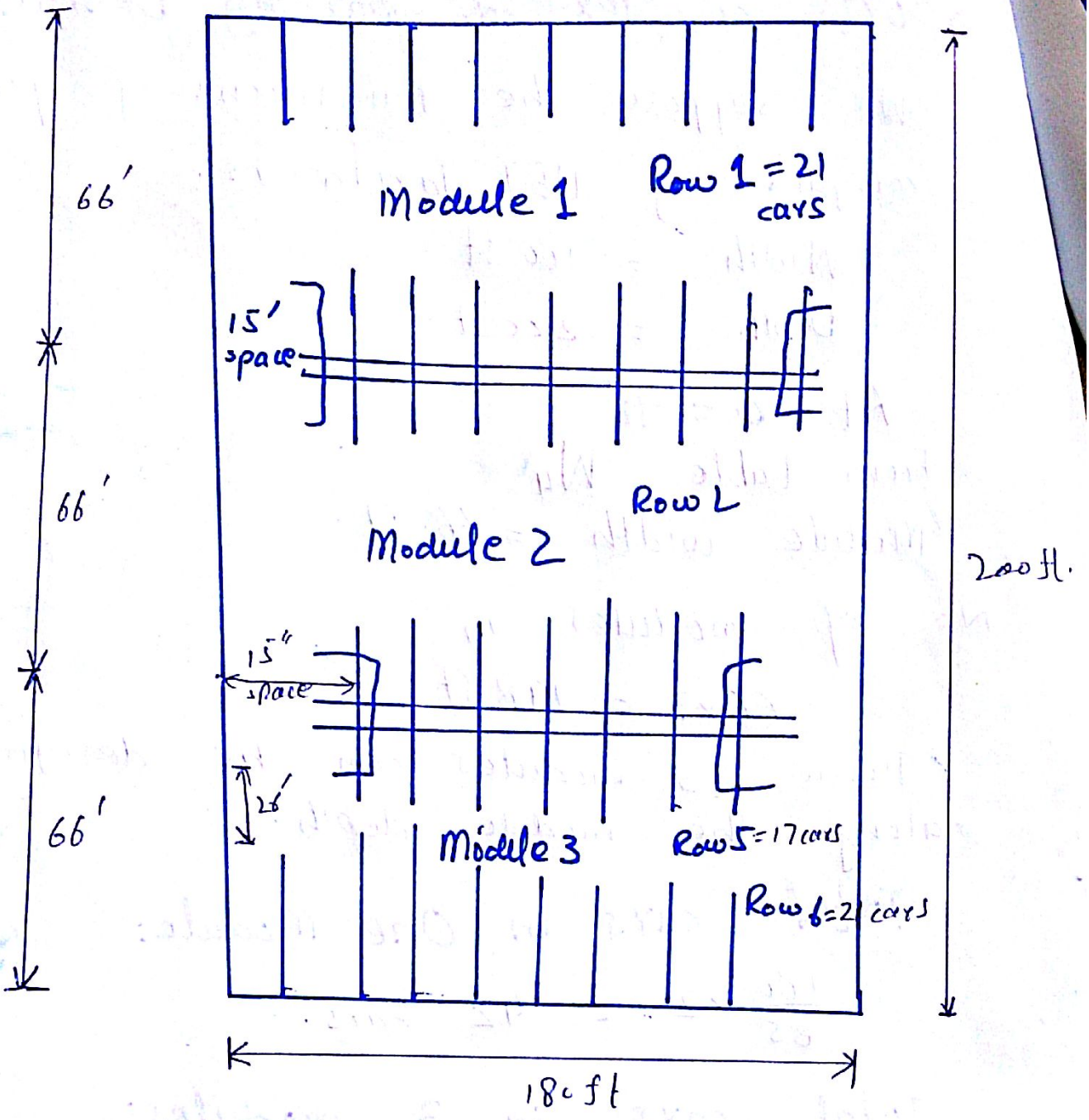
$\frac{180}{8.5} \times 2 \times 3 = 127$ cars.

No of cars in Row 1

$\frac{180}{8.5} \times 1 = 21$ cars

" " " Row 2

$\frac{180 - 30}{8.5} \times 1 = 17$ cars



No of cars in Row 3:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars}$$

No of cars in Row 4:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars.}$$

No of cars in Row 5:

$$\frac{180-30}{8.5} \times 1 = 17 \text{ cars.}$$

No of cars in Row 6:

$$\frac{180}{8.5} \times 1 = 21 \text{ cars.}$$

Total number of cars

$$= 110 \text{ cars.}$$

Now at $\theta = 60^\circ$

From table.

W_4

Module width $= 51'8''$

let stall depth (SD) $= 16$ ft.

No of Modules:

$$51'8'' \times 3 = 155.4 \text{ ft.}$$

Three modules can be designed.

$$PW = \frac{SW}{\sin 60^\circ}$$

$$PW = \frac{8.5}{\sin 60^\circ}$$

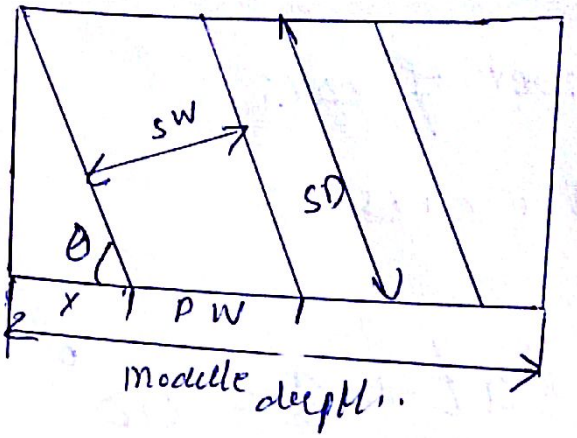
$$y = \frac{SD \cos 60^\circ}{}$$

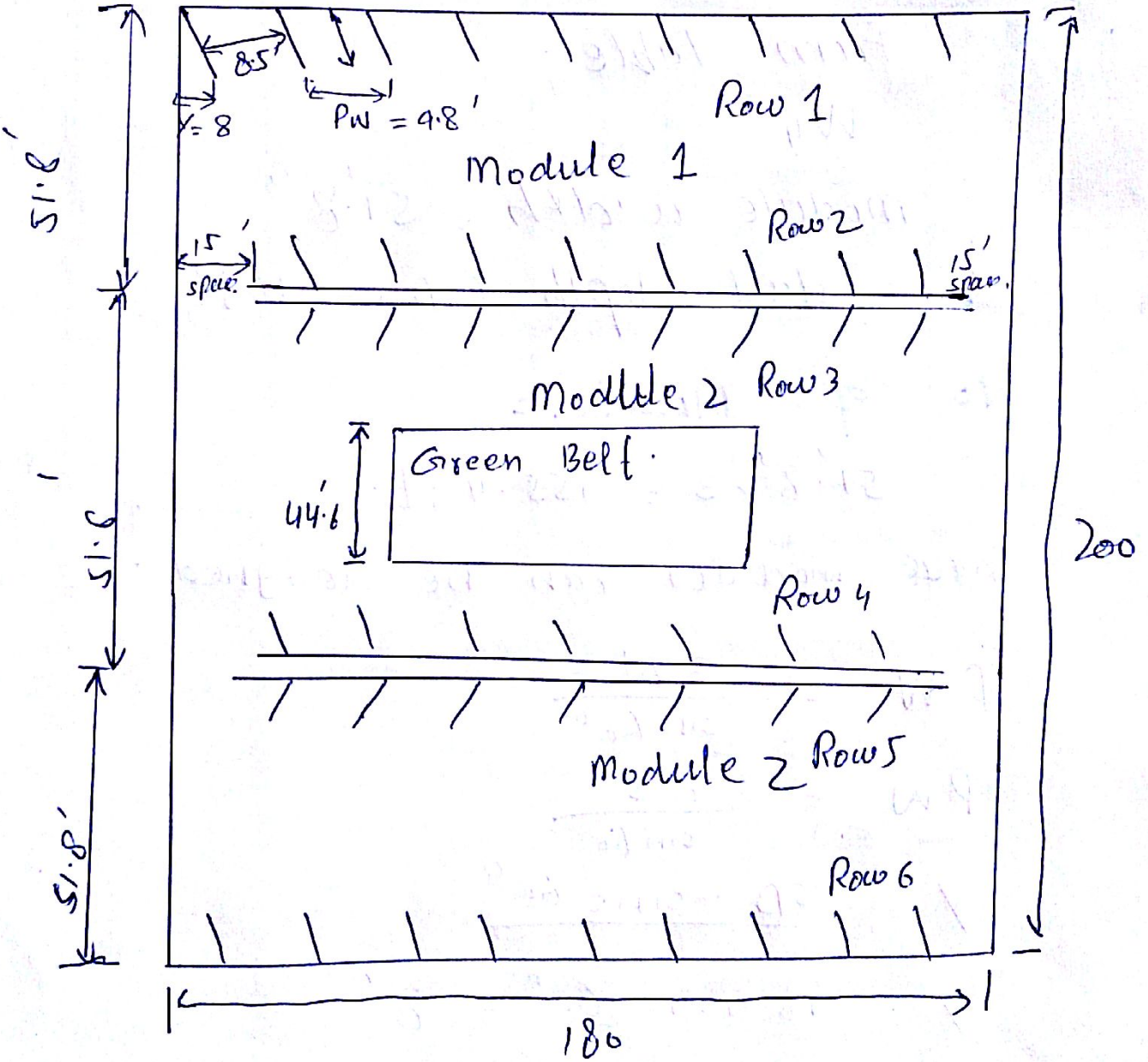
$$y = 16 \cos 60^\circ = 8'$$

Module depth $= y = (\text{no. of stalls}) \times PW. = 180$

no of stall $=$ Module depth $- y/PW$

no of stalls = 17





No of cars in Row 1

$$\frac{180-8}{9.8} = 17 \text{ cars.}$$

No of cars in Row 2

$$\frac{180-8-30}{9.8} = 14 \text{ cars.}$$

Now of cars in Row 3

$$\frac{180-8-30}{9.8} = 14 \text{ cars.}$$

Now of Cars in Row 4

$$\frac{180-8-30}{9.8} = 14 \text{ cars}$$

No of Cars in Row 5

$$\frac{180-8-30}{9.8} = 14 \text{ cars}$$

No of Cars in Row 6

$$\frac{180-8}{9.8} = 17 \text{ cars}$$

Total Cars: 90 cars.

Hence at an angle 90 more cars can be parked so I will prefer at $\theta = 90^\circ$.

ASSIGNMENT

"CAR PARKING DESIGN OF SPORTS COMPLEX OF UET TAXILA"

Submitted To :

"Dr. HARIS AZIZ"

Submitted By:

"GROUP No. 10"

⇒ 11 - IE - 65

⇒ 11 - IE - 56

⇒ 11 - IE - 55

Dated : 30-10-2014

⇒ CAR Parking Design of Sport Complex

Let Suppose Dimension of Sports Complex of UET Taxila is

width = 180 ft

Depth = 200 ft

At $\theta = 90^\circ$

From Table;

W4

Module width = 66.0 ft

⇒ No. of Modules in

$66' \times 3 = 198$ ft

Hence 3 modules can be designed along the module depth.

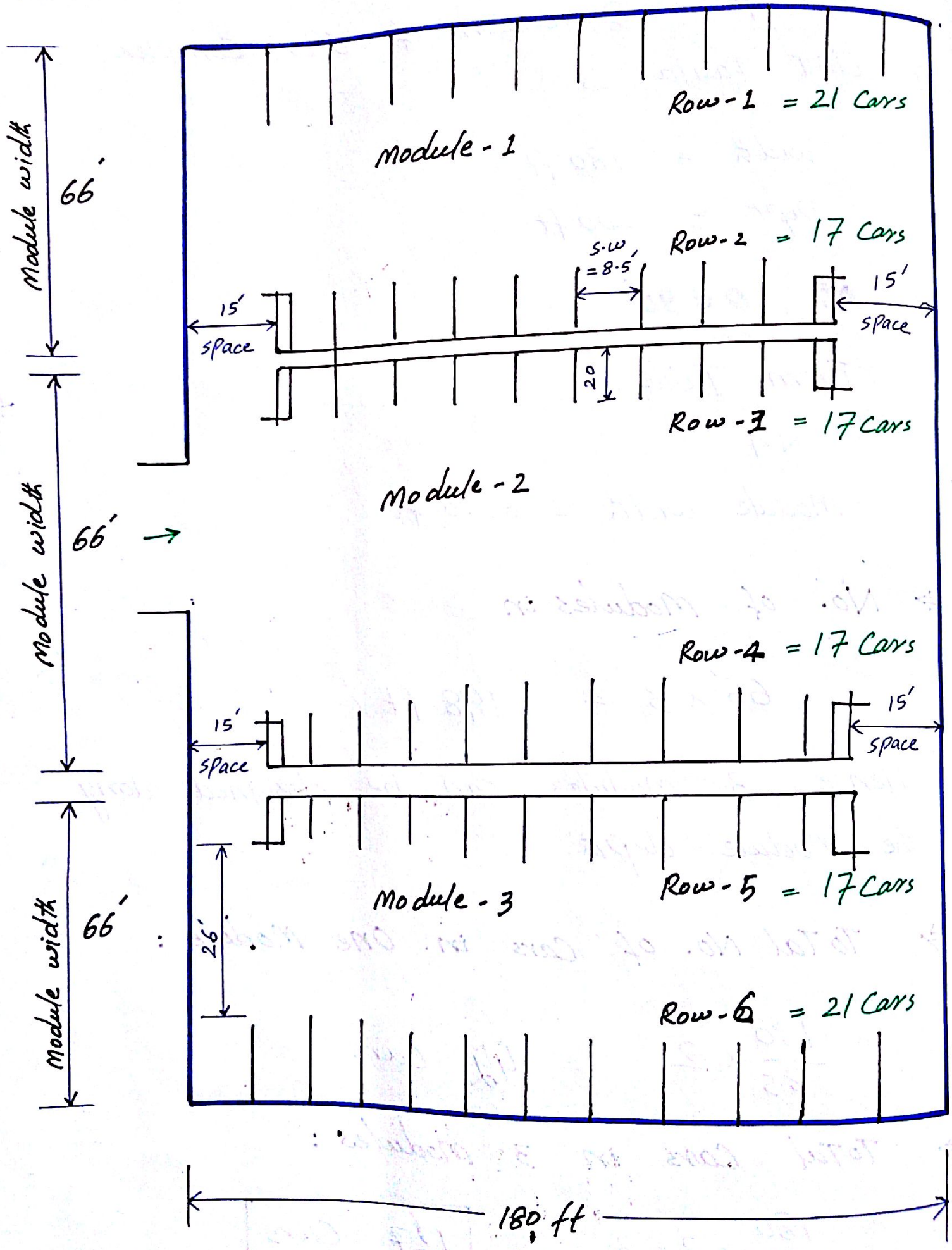
⇒ Total No. of Cars in One Module:

$\frac{180}{8.5} \times 2 = 42$ Cars

⇒ Total Cars in 3 Modules:

$\frac{180}{8.5} \times 2 \times 3 =$ **127 Cars**

➡ LAYOUT OF CAR PARKING at $\theta = 90^\circ$



⇒ No. of Cars in Row 1 :

$$\frac{180}{8.5} \times 1 = 21 \text{ Cars}$$

⇒ No. of Cars in Row 2 :

$$\frac{180-30}{8.5} \times 1 = 17 \text{ Cars}$$

∴

⇒ No. of Cars in Row 3 :

$$\frac{180-30}{8.5} \times 1 = 17 \text{ Cars}$$

⇒ No. of Cars in Row 4 :

$$\frac{180-30}{8.5} \times 1 = 17 \text{ Cars}$$

⇒ No. of Cars in Row 5 :

$$\frac{180-30}{8.5} \times 1 = 17 \text{ Cars}$$

⇒ No. of Cars in Row 6 :

$$\frac{180}{8.5} \times 1 = 21 \text{ Cars}$$

⇒ Total No. of Cars

$$\boxed{= 110 \text{ Cars}}$$

Now, at $\theta = 60^\circ$

From Table;

W4

Module width = 51'-8"

Let stall depth (SD) = 16 ft

No. of Modules:

$51'\text{-}8'' \times 3 = 155.4$ ft

Here also 3 Modules can be designed

$$PW = \frac{SW}{\sin 60^\circ}$$

$$Pw = \frac{8.5}{\sin 60^\circ} = 9.8'$$

$$Y = SD \cos 60^\circ$$

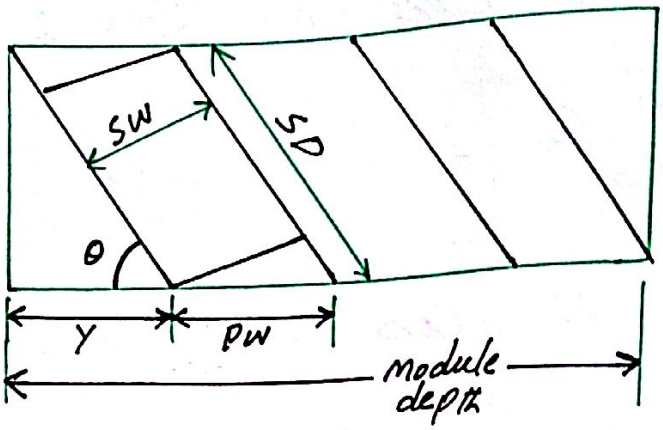
$$Y = 16 \cos 60^\circ = 8'$$

Module depth:

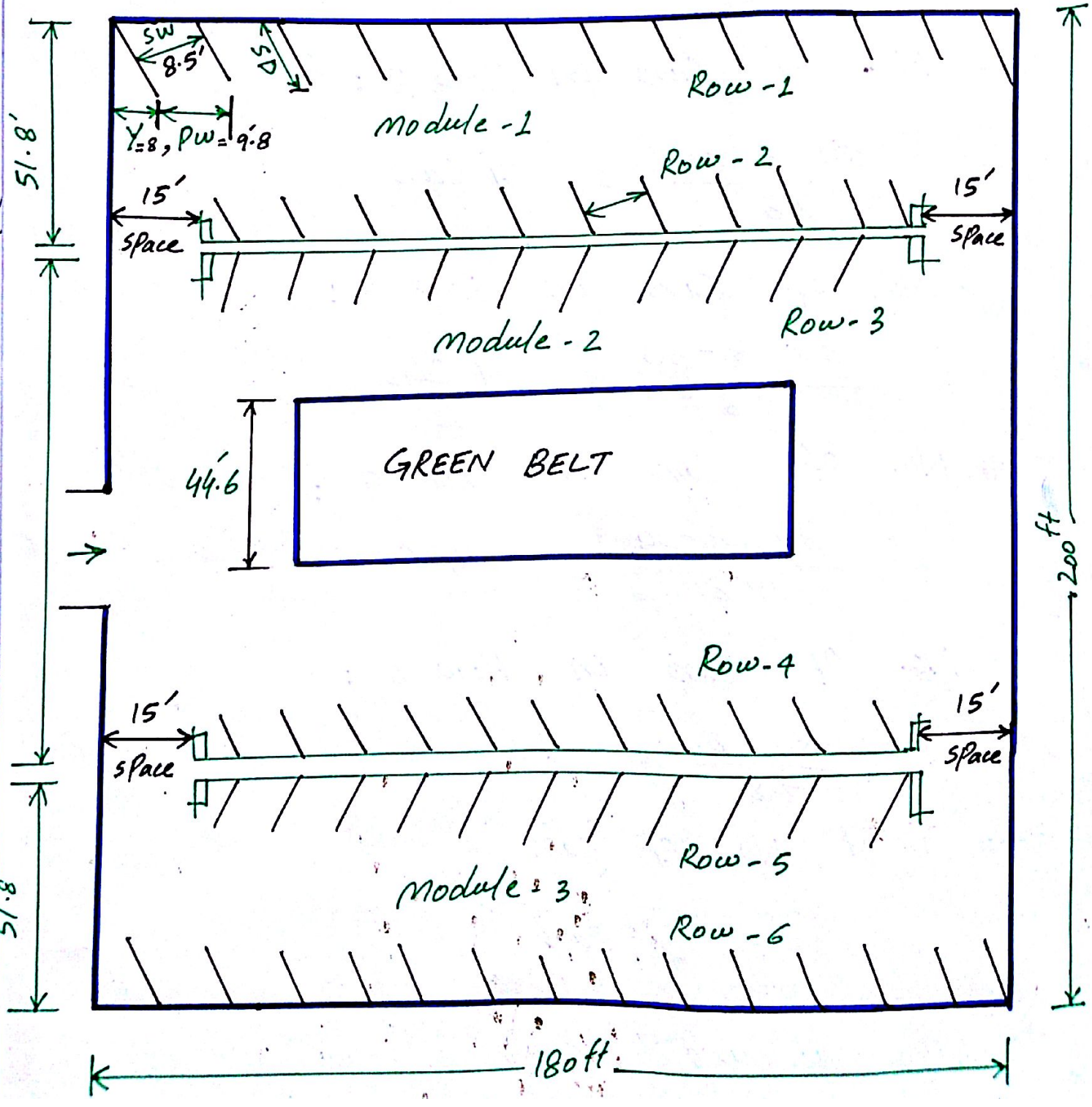
Module depth = $Y + (\text{no. of stalls}) \times Pw = 180$

no. of stalls = Module depth $- Y / Pw$

no. of stalls = 17



⇒ LAYOUT OF CAR PARKING AT θ = 60°



⇒ No. of Cars in Row 1 :

$$\frac{180-8}{9.8} = 17 \text{ Cars}$$

⇒ No. of Cars in Row 2 :

$$\frac{180-8-30}{9.8} = 14 \text{ Cars}$$

⇒ No. of Cars in Row 3 :

$$\frac{180-8-30}{9.8} = 14 \text{ Cars}$$

⇒ No. of Cars in Row 4 :

$$\frac{180-8-30}{9.8} = 14 \text{ Cars}$$

⇒ No. of Cars in Row 5 :

$$\frac{180-8-30}{9.8} = 014 \text{ Cars}$$

⇒ No. of Cars in Row 6 :

$$\frac{180-8}{9.8} = 17 \text{ Cars}$$

⇒ Total No. of Cars

$$= 90 \text{ Cars}$$

⇒ Hence at angle 90°, more Cars will be Parked

Multipurpose Hall Parking Lot Assignment

Group #2

Sameer S. Kham 11-IE-27

maaz Elahi 11-IE-31

Adil mustafa 11-IE-62

First, we use an angle of $\theta = 90°$, then $\theta = 60°$ with configuration 4 in both cases.

$\theta = 90°$:

Standard cars (8'-6") 90°, W4

module width 66'-0"

★ Checking to see depth of lot to accomodate a parking lot consisting of **2 modules** of standard cars:

$$2(66'-0") = 132 \text{ ft} < 184 \text{ ft}$$

So it is possible.

★ Checking to see car capacity based on **width of lot (101 ft)** divided by width requirement per stall (8.5 ft) times rows per module (2) times no. of modules (2).

$$\frac{101}{8.5} \times 2 \times 2 = 47.53 \simeq 47 \text{ Standard cars.}$$

space requirements:

Row 1: $\frac{101}{8.5} = 11$ spaces

Assuming 2 circulation lanes 15' each, we get

Row 2: $\frac{101 - (2 \times 15')}{8.5} = 8$ spaces

Row 3: $\frac{101 - (2 \times 15')}{8.5} = 8$ spaces

Row 4: $\frac{101}{8.5} = 11$ spaces

Rows	Standard cars
#1	11
#2	8
#3	8
#4	11
	38 spaces

★ So 38 cars can fit in this layout.

★ Another assumption we may use is to include a **Third** module that has "One row" centered with circulation lanes.

In this case, depth of lot to accomodate 3 modules will become:

$$2(66'-0'') + \frac{1}{2}(66'-0'') = 165\text{ft} < 184\text{ ft}$$

Therefore less space is wasted, O/C.

Space Requirements:

Row1: $\frac{101}{8.5} = 11$ spaces

Row2: Assuming 2 15' circulation lanes

$$\frac{101 - (2 \times 15')}{8.5} = 8 \text{ spaces}$$

Row2 = Row3 = Row4 = Row5 = 8 spaces

Rows	Standard cars
#1	11
#2	8
#3	8
#4	8
#5	8
	43 spaces

★ Hence more cars (43) can fit in this assumption.

Now, $\theta = 60°$

Standard cars (8'-6") module width

60°, w4 51'-8" = 51.66 feet

Assuming Stall depth = SD = 16'

(1) Parking width (PW) = $\frac{\text{Stall width}}{\sin\theta}$

$= \frac{8.5}{\sin 60°} = 9.8'$

(2) Angle lost due to parking at angle

$y = SD \cos\theta = 16 \times 0.5 = 8'$
(Stall depth)

(3) module Depth = $y + (\text{no. of stalls} \times PW)$

no. of stalls = $\frac{\text{module depth} - y}{PW}$

$= \frac{101 - 8}{9.8} =$ **9 stalls**

Checking to see depth of lot to accomodate parking lot consisting of **3 modules**:

$3(51.66) = 154.98$ feet < 184 feet

* It is OK.

Space Requirements:

Car space for **row 1**: $\frac{101-8}{9.8} = 9$ spaces/stalls

Row 2:

$\frac{101 - 8 - (15 \times 2)}{9.8} = 6$ spaces

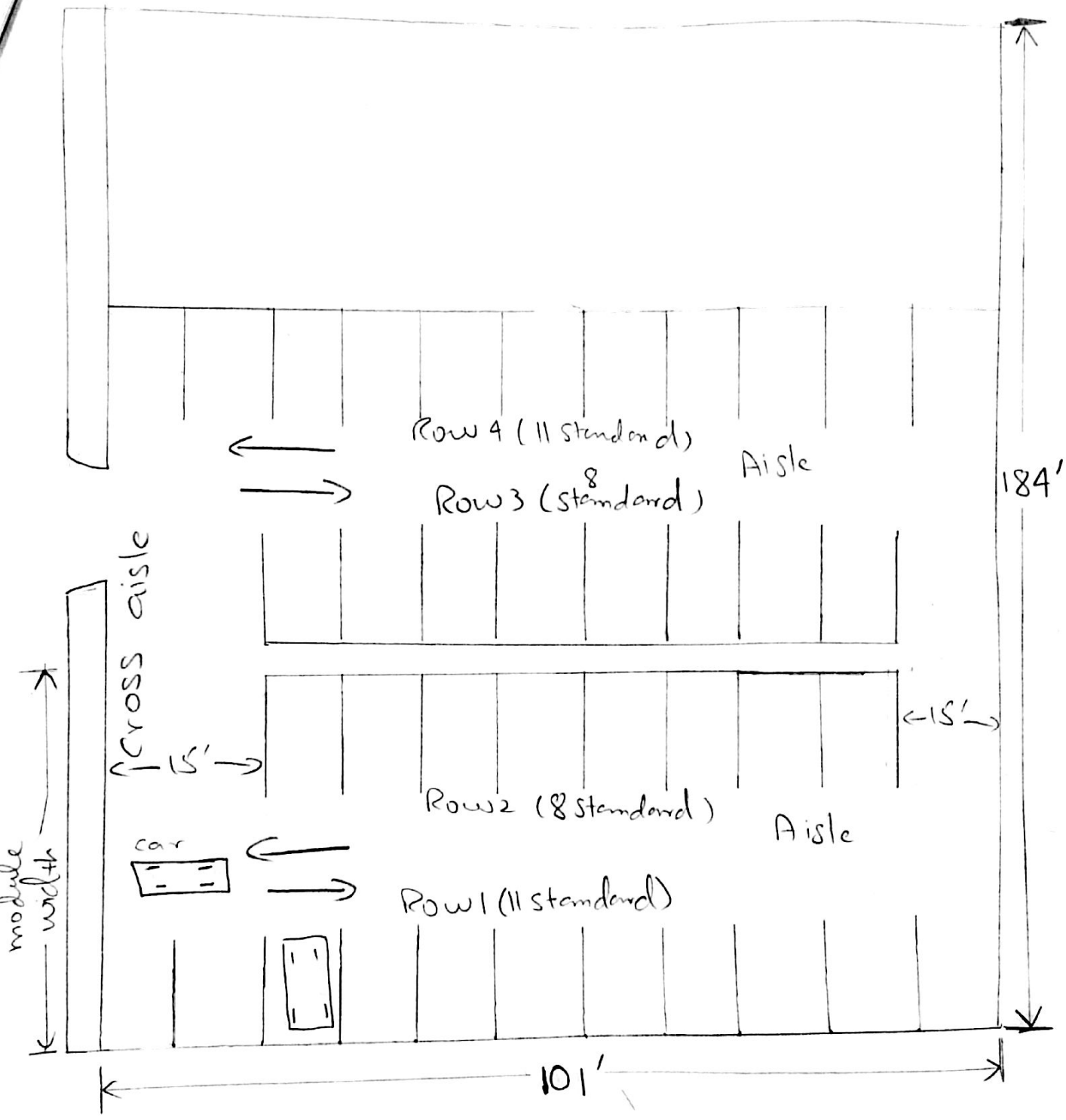
Row 2 = Row 3 = Row 4 = Row 5 = 6 spaces

Row 6 $\therefore \frac{101-8}{9.8} = 9$ spaces

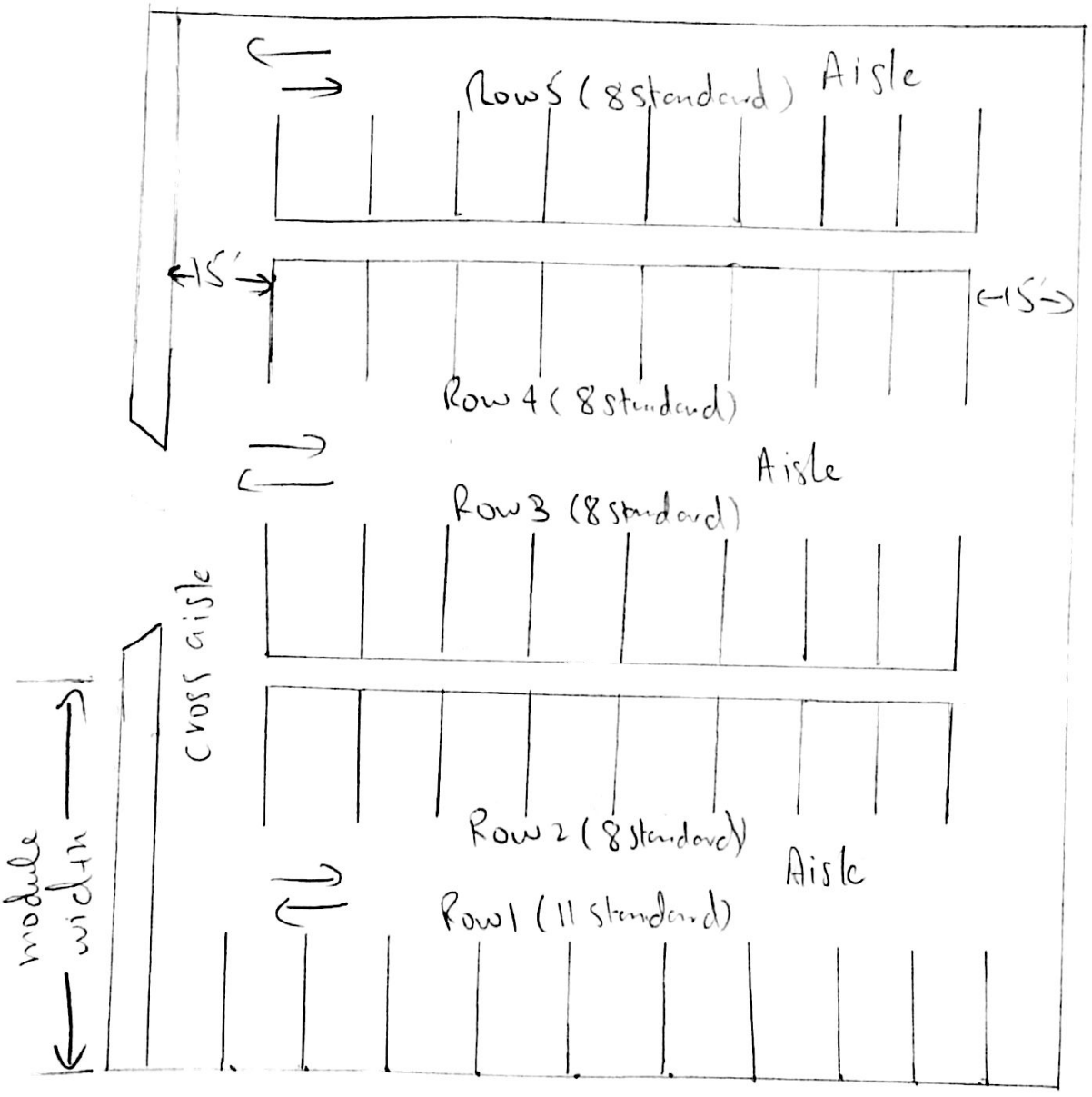
Rows	Standard cars
#1	9
#2	6
#3	6
#4	6
#5	6
#6	9
	42 spaces

★ Hence at $\theta = 60°$, 42 cars can fit.

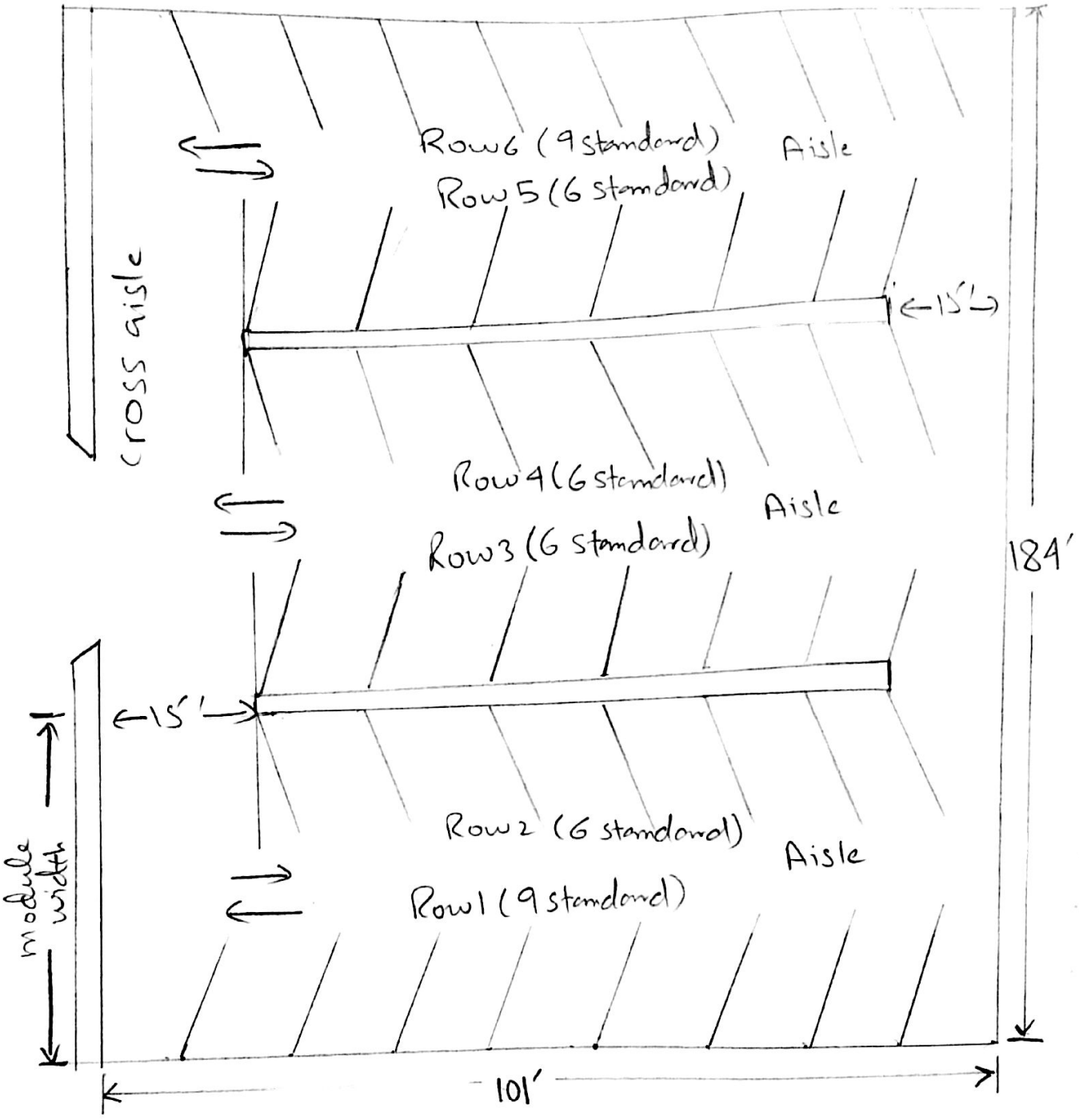
Hence we can conclude that maximum cars (43) will accomodate in the 5 row assumption at $\theta = 90°$, but if 2 modules (4 rows) are assumed then $\theta = 60°$ can fit more cars (42).



$\theta = 90°$, 2 modules (4 Rows)



$\theta = 90°$, 3 modules (5 rows)



$\theta = 60°$, 3 modules (6 Rows)

Group #01

Hammad Shah 11-IE-21.
H-Hammad-Ali 11-IE-32.
Hammad Hassan. 11-IE-41.

Car Parking Design of sport complex

Let suppose dimension of sports complex of UET Taxila is

width = 180 ft

Depth = 200 ft

At $\theta = 90°$

From table ; W4

Module width = 66.0 ft

$\Rightarrow$ No. of modules in

66' x 3 = 198 ft

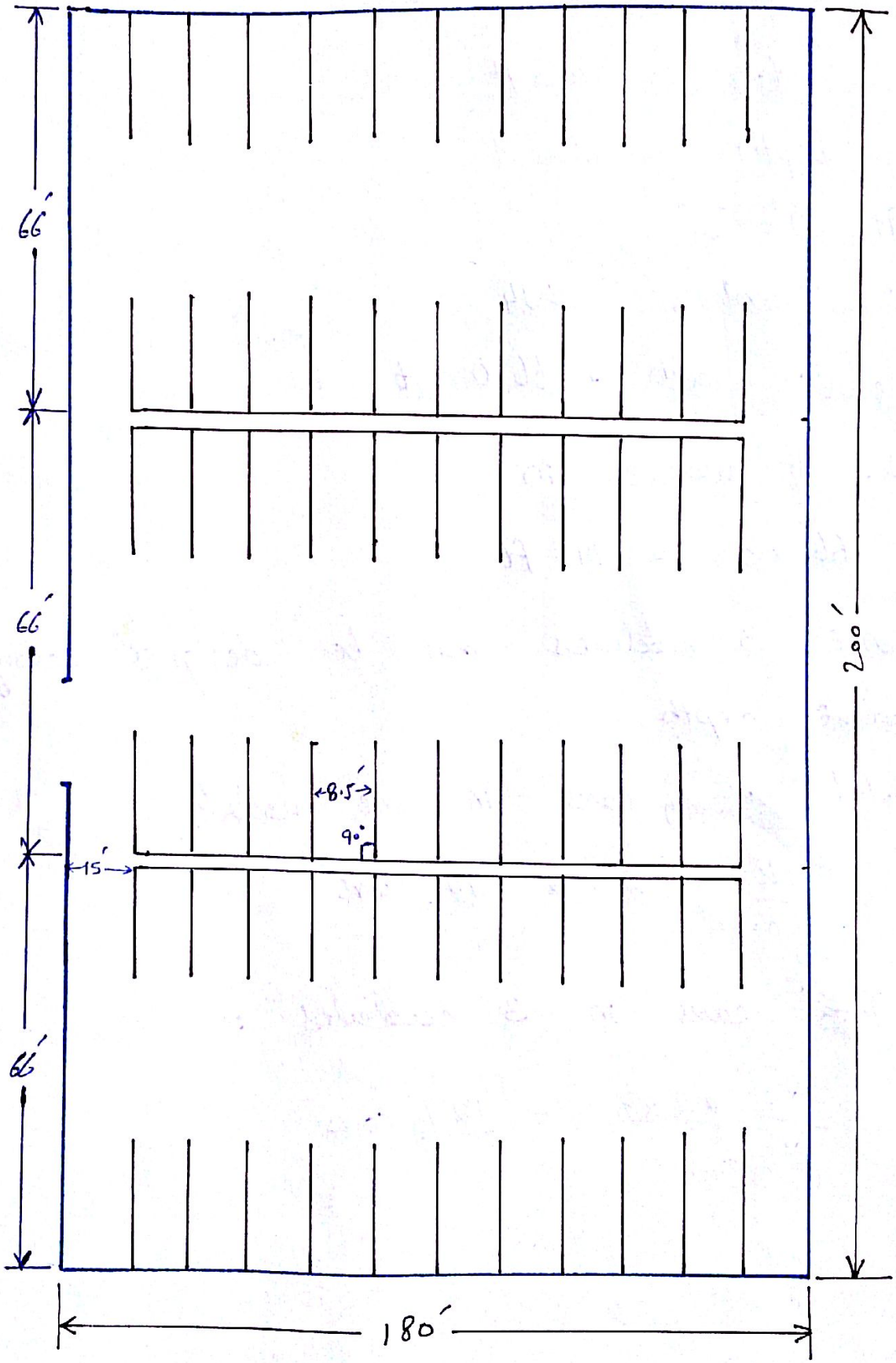
Hence 3 modules can be designed along the module depth.

$\Rightarrow$ Total no of cars in one module.

$\frac{180}{8.5} \times 2 =$ **42** cars

$\Rightarrow$ Total cars in 3 modules :-

$\frac{180}{8.5} \times 2 \times 3 =$ **127** cars


66'
66'
66'
8.5'
90°
15'
200'
180'

No of cars in Row 1 :-

$$\frac{180}{8.5} \times 1 = 21$$

$\Rightarrow$ No of cars in Row 2 :-

$$\frac{180 - 30}{8.5} \times 1 = 17 \text{ Cars}$$

$\Rightarrow$ No of cars in Row 3 :-

$$\frac{180 - 30}{8.5} \times 1 = 17 \text{ Cars}$$

$\Rightarrow$ No of cars in Row 4 :-

$$\frac{180 - 30}{8.5} \times 1 = 17 \text{ Cars}$$

$\Rightarrow$ No of cars in Row 5 :-

$$\frac{180 - 30}{8.5} \times 1 = 17 \text{ Cars}$$

$\Rightarrow$ No of cars in Row 6 :-

$$\frac{180}{8.5} \times 1 = 21 \text{ Cars}$$

Total No of Cars

$$= 110 \text{ Cars}$$

Now, at $\theta = 60°$

From table ; W4

module width = 51'.8"

Let stall depth (SD) = 16 ft

No of modules :-

$51'.8" \times 3 = 155.4$ ft

Here also 3 modules can be designed

$$PW = \frac{SW}{\sin 60}$$

$$PW = \frac{8.5}{\sin 60} = 9.8'$$

$$Y = SD \text{ Cosine } 60°$$

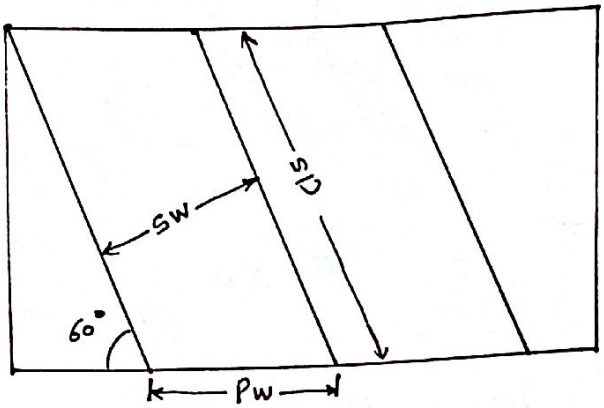
$$Y = 16 \text{ Cosine } 60° = 8'$$

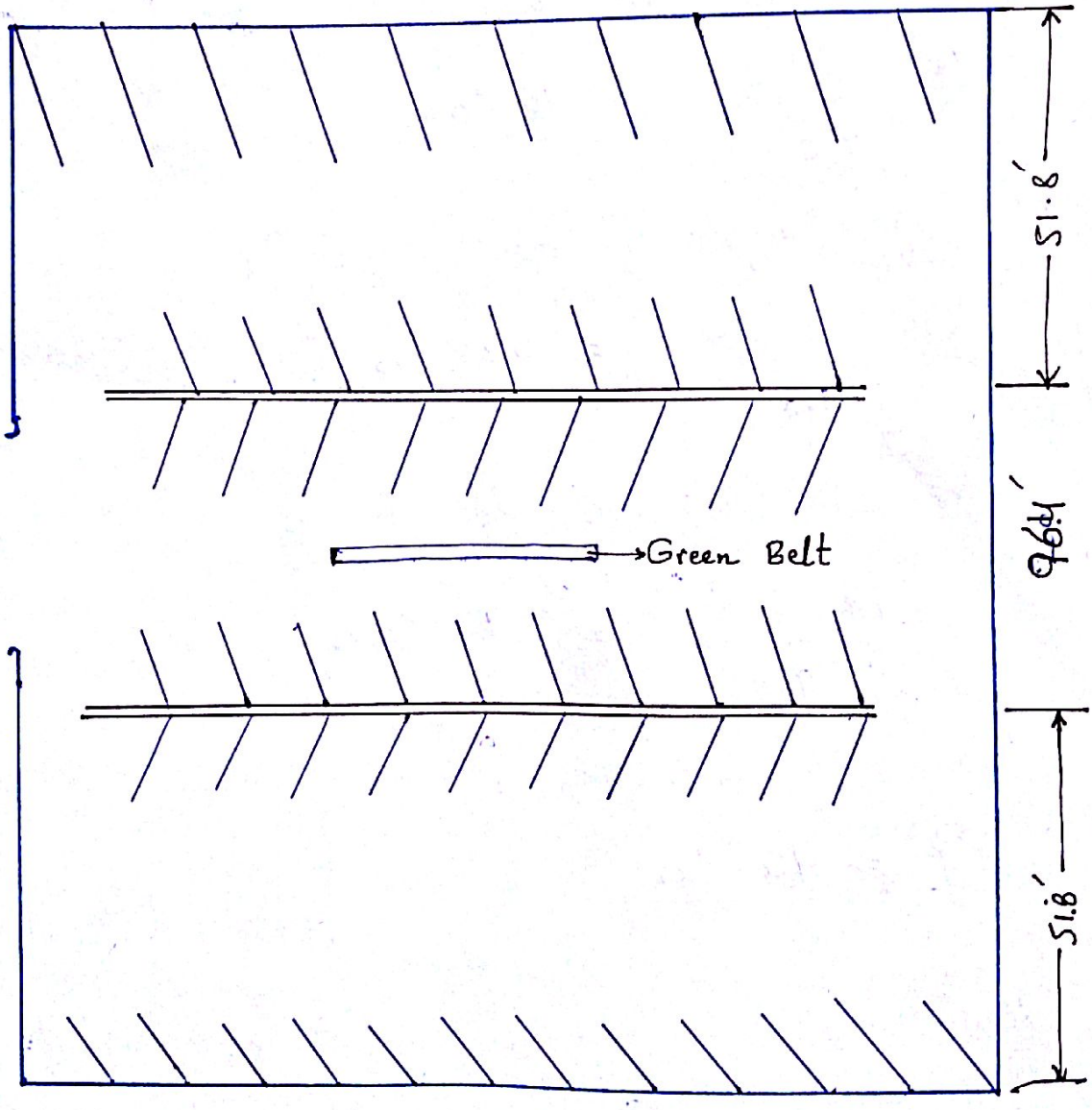
module depth :-

module depth = $Y + (\text{no of stalls}) \times PW = 180$

no of stalls = module depth $- Y/PW$

no of stalls = 17





1200

⇒ No of cars in Row 1 :-

$$\frac{180 - 8}{9.8} = 17 \text{ cars}$$

⇒ No of cars in Row 2 :-

$$\frac{180 - 8 - 30}{9.8} = 14 \text{ Cars}$$

⇒ No of cars in Row 3 :-

$$\frac{180 - 8 - 30}{9.8} = 14 \text{ Cars}$$

⇒ No of cars in Row 4 :-

$$\frac{180 - 8 - 30}{9.8} = 14 \text{ Cars}$$

⇒ No of cars in Row 5 :-

$$\frac{180 - 8 - 30}{9.8} = 14 \text{ Cars}$$

⇒ No of Cars in Row 6 :-

$$\frac{180 - 8}{9.8} = 17 \text{ Cars}$$

⇒ Total no of cars :-

$$= 90 \text{ Cars}$$

⇒ Hence at angle 90° more cars will be parked.

11-1E-33, 44, 66 Q.12

Let suppose dimensions of sports complex of UET Taxila is

Width = 180ft

depth = 200ft

Taking $\theta = 90°$

Module width = 66.0 ft

Number of modules

$66 \times 3 = 198$ ft

Hence three modules can be designed.

Total number of cars in one module :-

$$\frac{180}{8.5} \times 2 = 42 \text{ cars}$$

total cars in three modules = $42 \times 3 = 127$ cars.

Number of cars in Row 1 = $\frac{180}{8.5} \times 1 = 21$ cars

Number of cars in Row 2 = $\frac{180-30}{8.5} \times 1 = 17$ cars

" " " " " " 3 = $\frac{180-30}{8.5} \times 1 = 17$ cars

" " " " " " 4 = $\frac{180-30}{8.5} \times 1 = 17$ cars

number of cars in Row 5 = $\frac{180-30}{8.5} \times 1 = 17$ cars

" " " " " 6 = $\frac{180}{8.5} \times 1 = 21$ cars

Total number of cass = 110

Now $\theta = 60$

Module width = 51'.8"

No. of modules = $51.8 \times 3 = 155.4$ ft

$$PWI = \frac{SWI}{\sin 60^\circ}$$

$$PW = \frac{8.5}{\sin 60^\circ} = 9.8'$$

$y = SD \cos 60^\circ = 16 \cos 16 = 8'$

$$\text{Number of Stalls} = \text{module depth} - \frac{Y}{PW}$$

$$= 17$$

Number of cars in Row 1 = $\frac{180-8}{9.8} = 17$ cars

" " " " " 2 = $\frac{180-8-30}{9.8} = 14$ cars

" " " " " 3 = $\frac{180-8-30}{9.8} = 14$ cars

" " " " " 4 = $\frac{180-8-30}{9.8} = 14$ cars

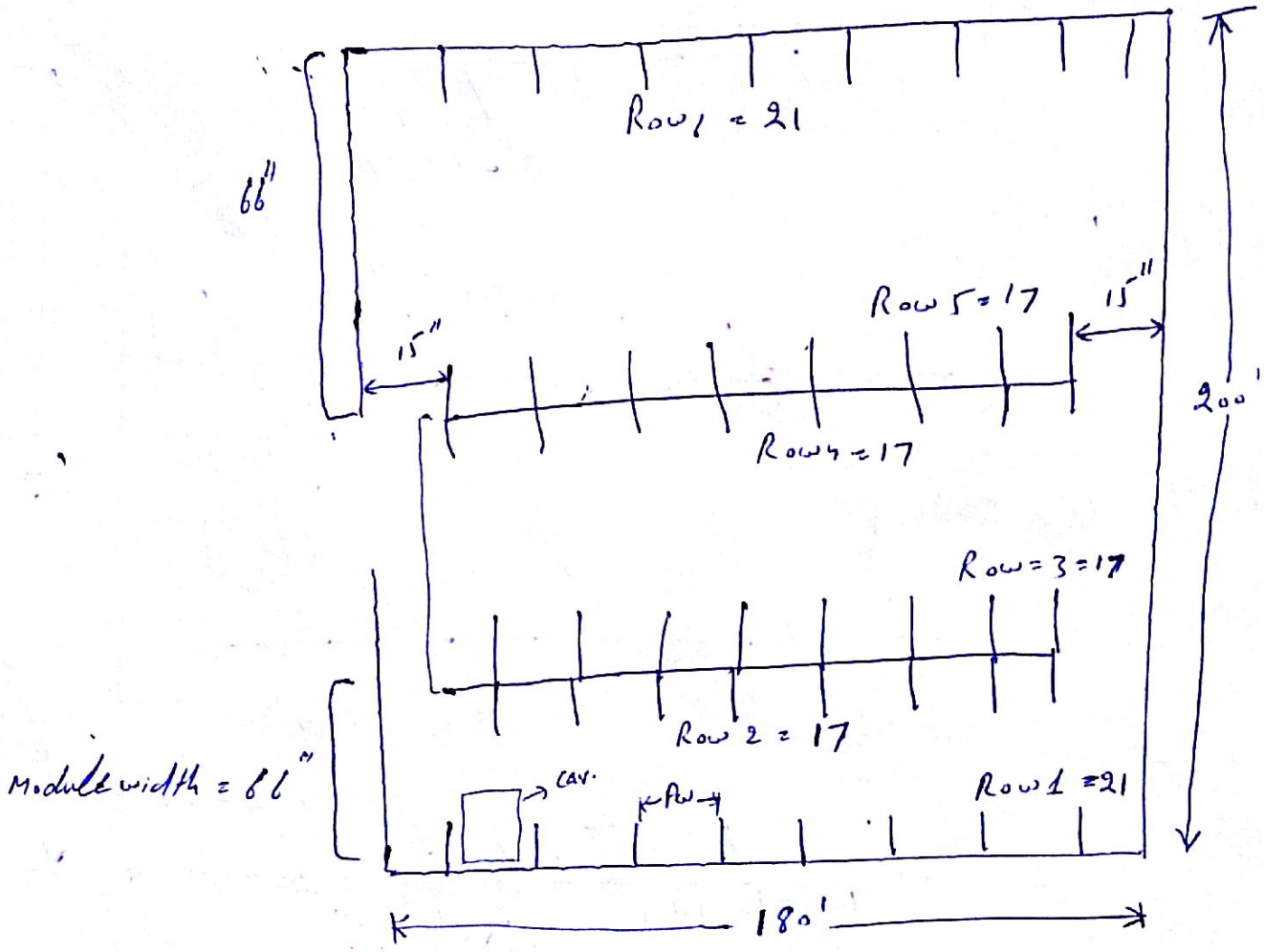
" " " " 5 = $\frac{180-8-30}{9.8} = 14$ cars

" " " " 6 = $\frac{180-8-30}{9.8} = 17$ cars

total number of cars = 90

At 90° more cars can be placed.

At $\theta = 90^\circ$

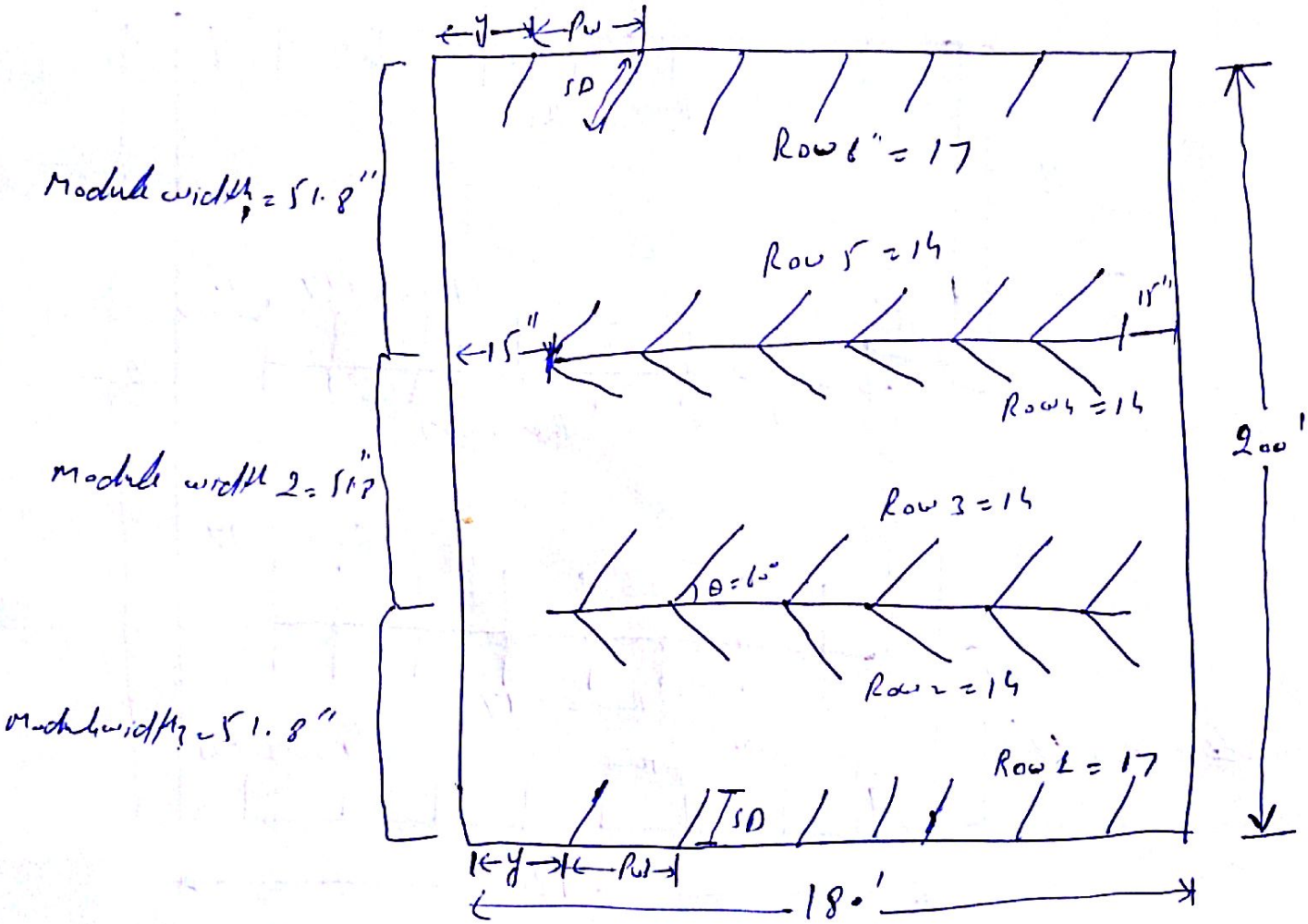


Total cavs = Row 1 + Row 2 + Row 3 + Row 4 + Row 5 + Row 1

Total cavs Parked = 21 + 17 + 17 + 17 + 17 + 21

Total cavs. = 110 cavs

At angle 60°



Total Cans Packed = Row 1 + Row 2 + Row 3 + Row 4 + Row 5 + Row 6

= 17 + 14 + 14 + 14 + 17 + 17

Total Cans Packed = 90 Cans.

ASSIGNMENT:
Car parking at MPH

Submitted To:-

Dr. Haris Aziz

Group # 11

11-IE-45

11-IE-38

11-IE-64

The dimension of the parking Ground of MPH- UET Taxil is.

depth = 184

width = 101

(i) First we solve at $\theta = 90^\circ$

Standard cars ($8'-6''$) modul width $66-0''$

90°, W4.

we can adjust 2 module W4 and 1 modul of W1. so

for W1

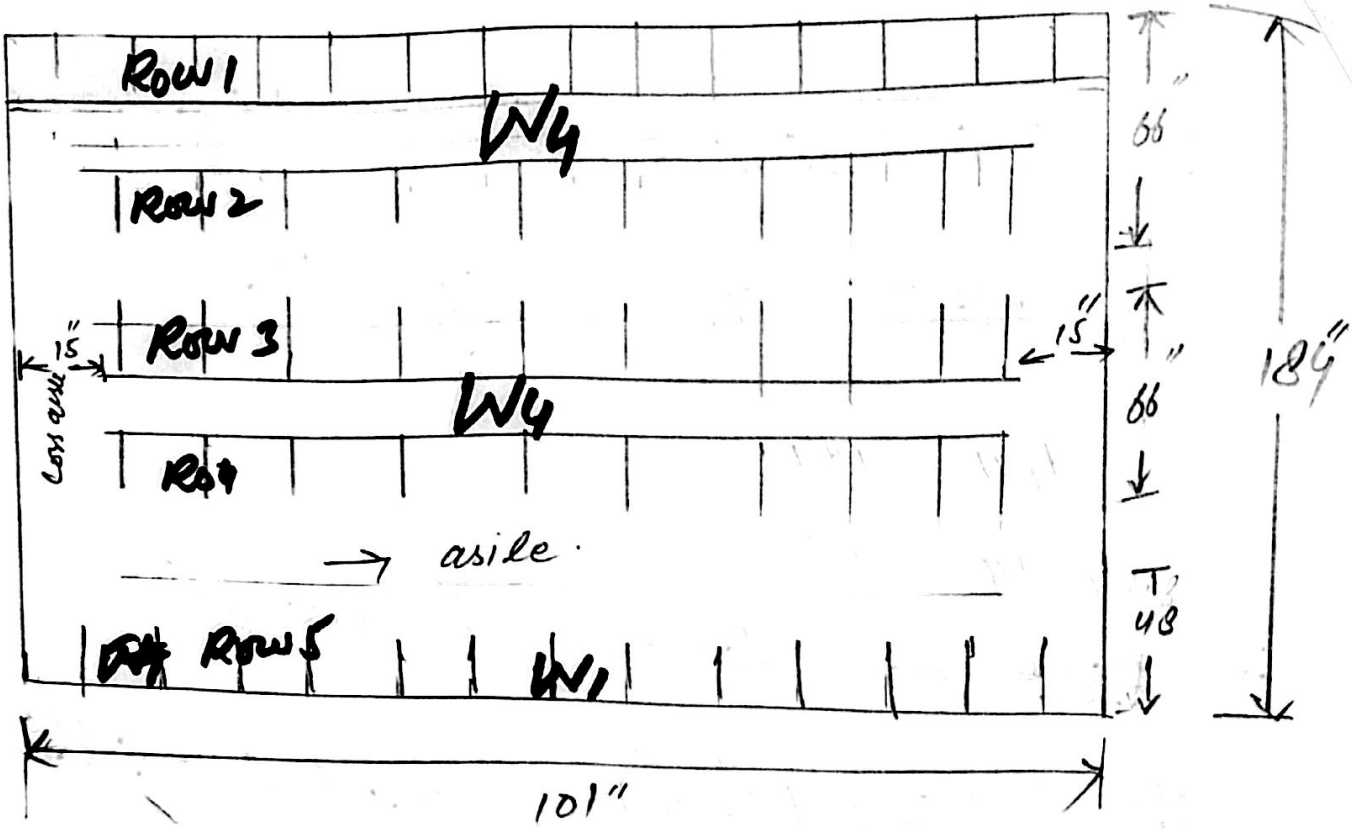
Standard car1 ($8'-6''$) modul width $66-0''$

90 W1

Hence

$66 + 66 + 48 = 180$

$180 < 184$ so it is possible..



now we find number of car :

in ROW 1 = $\frac{101}{8.5}$ = 11 spaces

the numbe of space in row 1 and ROW 5 are equal so

ROW 5 = 11 spaces.

ROW 2 = $\frac{184 - (15 \times 2)}{8.5}$ = 8 spaces.

number of car in ROW 2, ROW 3, ROW 4 and equal.

ROW 3 = 8

Row 4 = 8 paces

Rows = Spaces

Total number of cars

Rows	Standard cars
1	11
2	8
3	8
4	8
5	11
	46 Spaces.

46 spaces.

with out these module we can not use other module To maximize car at 90° angle.

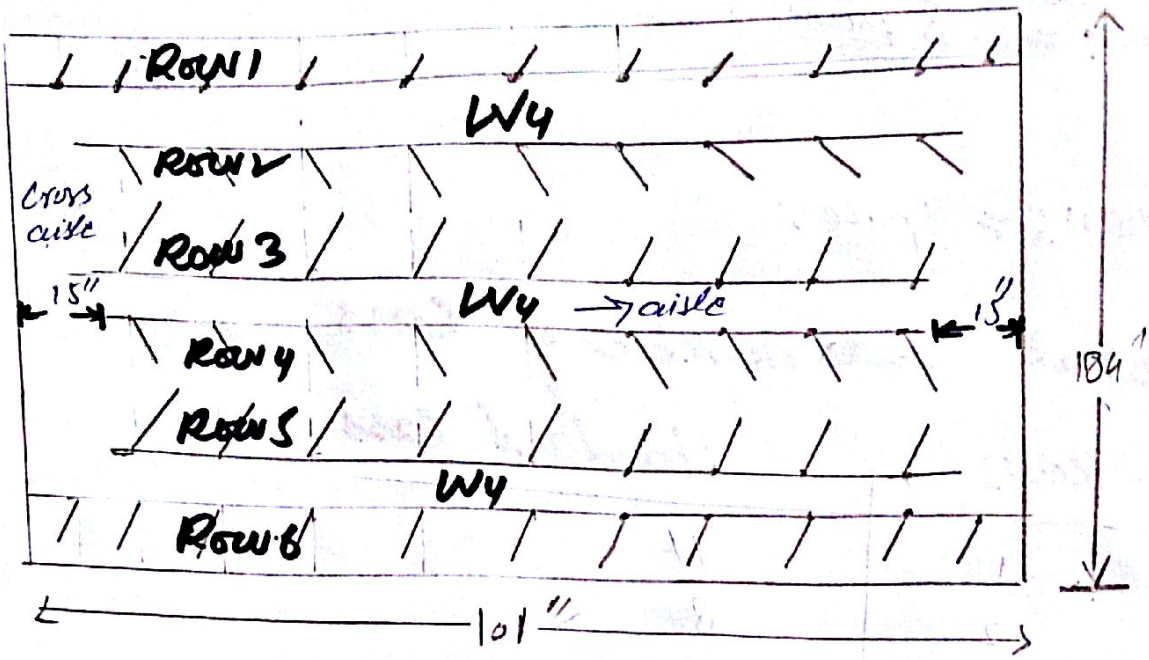
b) Now we solve at $\theta = 60°$

W_4 (8.5") module width 51' 8"

so we can adjus 3 Modul of W_4

$3(51' 8") = 155$

$155 < 184$ so we can use.



Parking width (PW) $= \frac{SW}{\sin\theta}$

$= \frac{8.5}{\sin 60^\circ}$

$= 9.8'$

Space wasted due to angle 60°

$y = SD\cos\theta = 16 \times 0.5 = 8'$

module depth $= (y + \text{no. of stalls} \times PW)$

$101 = 8 + \text{no. of stall} \times 9.8$

$\text{no. of stall} = \frac{104 - 8}{9.8}$

$= 9$ stall.

Now we find number of spaces in each Row.

$$\text{Row 1} = \frac{180 - 8}{9.8} = 9$$

$$\text{Row 6} = \frac{180 - 8}{9.8} = 9$$

$$\text{Row 2} = \frac{180 - 8 - (2 \times 15)}{9.8}$$

$$= 6 \text{ spaces.}$$

Row 2 = Row 3 = Row 4 = Row 5

so

Row 3 = 6

Row 4 = 6

Row 5 = 6

Hence Total number of cars.

Row	Standard cars
1	9
2	6
3	6
4	6
5	6
6	9
	42 Cars

The number of cars at $\theta = 60^\circ$ are = 42

Result:-

From the above cases we have resulted that the number of cars at $\theta = 90^\circ$ are 46 so at $\theta = 90^\circ$ we can park Maximum cars.

So the Maximum cars that we can parked = 46.
at $\theta = 90^\circ$.