

PROCESS IMPROVEMENT OF KAISER PERMANENTE MEDICAL GROUP

By:

Connie Chou

Brett Witherall

IME 482

Winter 2011

Technical Advisor: Dr. Liz Schlemer

Agenda

- Scheduling/Assignment Database
 - Design
 - Benefits
- Workstation redesign
 - Current Arrangements
 - New Design
 - MTM Analysis
 - Workstation Height Standards
- Q & A

Current Assignment Template

	A	B	C	D	E	F	G	H	I	
1		Monday	5-Jul		Sups		Monday	5-Jul		
2		Week 4			Sort		Week 4			
3		9:00-3:15		3:30-5:30			9:00-3:15		3:30-5:30	
4	1	Jahie	PP/DHL	Jahie	PP/DHL	1	Adrian	MO	Adrian	MO
5	2	Vince Nieto	ATC		ATC	2	AJ	53 Sort Tray	AJ	S-2
6	3	Darren	ATC		ATC	3	Andrew M.	Tote MGMT	Andrew M.	Tote M
7	4				Extra	4	Ashley B.	19 Pack	Ashley B.	4 Pack
8	5	Joseph	S-1	Brookanne	S-1	5	Brittney	18 Pack	Brittney	8 Pack
9	6	Erin	S-2	AJ	S-2	6	Brookanne	15 Pack	Brookanne	S-1
10	7	Deshawndre	S-3	Olympia	S-3	7	Bryan	AP	Bryan	AP
11	8		S-3 - Overlap	Chandra	Insulin Pack	8	Chandra	Insulin Pack	Chandra	Insulin
12	9	Mario	F	Melissa	F	9	Claudia M.	55 Sort Tray	Claudia M.	10 Pa
13	10	Michelle G.	ST	Adrian	MO	10	Darrell	IPD	Darrell	IPD
14	11	Adrian	MO	Vu	ST	11	Darren	ATC	Darren	55 So
15	12	Chandra	Insulin Pack		Extra	12	Deshawndre	S-3	Deshawndre	
16	13	Jayson P.	Insulin Pack		Extra	13	Dora	2 Pack	Dora	1 Pack
17	14		MO/STR		Extra	14	Erika S.	5 Pack	Erika S.	AF-2/4
18	15				Extra	15	Erin	S-2	Erin	6 Pack
19	16	Evan	AF-1	Matt G.	AF-1	16	Evan	AF-1	Evan	49 So
20	17	Jason E.	AF-2/4	Erika S.	AF-2/4	17	Felicia	AF-3	Felicia	51 So
21	18	Felicia	AF-3	Warren	AF-3	18	Jahie	PP/DHL	Jahie	PP/DH
22	19		AF-3 - Overlap		AF-3 - Overlap	19	Jason E.	AF-2/4	Jason E.	52 So
23	20		AF-4		AF-4	20	Jayson P.	Insulin Pack	Jayson P.	53 So
24	21	Bryan	AP		Extra	21	John	54 Sort Tray	John	12A
25	22		AP	Bryan	AP	22	Joseph	S-1	Joseph	
26	23		12A	John	12A	23	Justin	51 Sort Tray	Justin	12B Pa
27	24		12B Pack	Justin	12B Pack	24	Kim Y.	Mini-Rx	Kim Y.	48 So
28	25		12-Pack		12-Pack	25	Luel	Mini-Rx	Luel	Cage
29	26		23A Pack	Mario	23A Pack	26	Mario	F	Mario	23A Pa
30	27		23B-Pack	Navie	23B-Pack	27	Marlene	13 Pack	Marlene	Mini-R
31	28	Vu	Cage	Luel	Cage	28	Marlow	1 Pack	Marlow	50 So
32	29	William	IPD	William	IPD	29	Matt G.	52 Sort Tray	Matt G.	AF-1
33	30	Darrell	IPD	Darrell	IPD	30	Melissa	14 Pack	Melissa	F
34	31	Luel	Mini-Rx	Marlene	Mini-Rx	31	Michelle A.	7 Pack	Michelle A.	
35	32	Kim Y.	Mini-Rx	Ruthie	Mini-Rx	32	Michelle G.	ST	Michelle G.	2 Pack
36	33	Theresa	Mini-Rx		Mini-Rx	33	Navie	17 Pack	Navie	23B-P
37	34		Mini-Rx		Mini-Rx	34	Olympia	3 Pack	Olympia	S-3
38	35		Mini-Rx		Extra	35	Pierre	Green Totes	Pierre	Green

New Program



KAISER PERMANENTE®

Begin >>

Revise Assignments

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

View Schedule

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Search for Back-ups

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Add/Delete/Update

Add New Employee

Delete Employee Entry

Update Availability

View Current Emp
Availability

Main Menu

Begin Assignments

Su	M	T	W	R	F
Day	56	52	55	55	49
Night	36	51	47	46	51

Srty	Name	Sun_Beg	Sun_End	Mon_Beg	Mon_End	Tue_Beg	Tue_End	Wed_Beg	Wed_End	Thr_Beg	Thr_End
1	Tita			3:30:00 PM	12:00:00 AM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM
2	Jimmie			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
3	Chandra			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
4	Luel			3:30:00 PM	12:00:00 AM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM
5	Steve			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
6	Jesse			3:30:00 PM	12:00:00 AM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM
7	Cynthia			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
8	Danny			3:30:00 PM	12:00:00 AM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM
9	Victor			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
10	Kim Y			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
11	Vince Nieto			9:00:00 AM	3:30:00 PM	9:00:00 AM	3:30:00 PM	9:00:00 AM	3:30:00 PM	9:00:00 AM	3:30:00 PM
12	Vince Narvaez	1:30:00 PM	10:00:00 PM			6:00:00 PM	11:00:00 PM	6:00:00 PM	11:00:00 PM	6:00:00 PM	11:00:00 PM
13	Evan			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
14	Jahie	1:30:00 PM	10:00:00 PM	7:00:00 AM	3:30:00 PM			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
16	Ron	1:30:00 PM	10:00:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
17	Felicia			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
18	Marlene			7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM	7:00:00 AM	3:30:00 PM
19	Lauren	1:30:00 PM	10:00:00 PM	3:30:00 PM	12:00:00 AM	3:30:00 PM	11:00:00 PM	3:30:00 PM	11:00:00 PM	6:00:00 PM	3:30:00 PM
20	Jason E.			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
21	Jayson P.	1:30:00 PM	10:00:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
22	Warren	1:30:00 PM	10:00:00 PM	9:00:00 AM	5:30:00 PM			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
23	Theresa			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
25	Diana			9:00:00 AM	3:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM
26	Bryan			9:00:00 AM	5:30:00 PM	9:00:00 AM	3:30:00 PM	9:00:00 AM	3:30:00 PM	9:00:00 AM	3:30:00 PM
27	Freddie			3:30:00 PM	12:00:00 AM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM	1:30:00 PM	10:00:00 PM
28	Sergio			9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM	9:00:00 AM	5:30:00 PM

Example Day Form

Monday

Choose shift



Go to Tuesday

9:00 AM - 3:15 PM 3:30 PM - 5:30 PM 3:30 PM - 7:30 PM 8:00 PM - 12:00 AM

Department:

Positions:

Name:

Assign

Shift 1

Shift 2

Shift 3

Sunday:

Friday:

Thursday:

Wednesday:

Tuesday:

See History

Monday Schedule

Position	Morning	Afternoon	Swing	Night
Insulin Pack 1	Claudia	Angie	Angie	Marleny
Insulin Pack 2	Carolyn	Carolyn		Jessica
Cage1				
Cage2				
AP1				
ATC1				
ATC2				
MOPP				
PP				



History Information

	<u>Shift 1</u>	<u>Shift 2</u>	<u>Shift 3</u>
Sunday:	Green Totes		
Friday:	QA	QA	
Thursday:	Pack16	Pack16	
Wednesday:	Pack9	Pack9	
Tuesday:			
See History			

Add/Delete/Update

Switchboard Monday_Backups Add_Employee

Add New Employee

Step 1:

Seniority: Name:

Availability (hh/ss/00 AM/PM)

Sunday Beg	<input type="text"/>	Sunday End	<input type="text"/>
Monday Beg	<input type="text"/>	Monday End	<input type="text"/>
Tuesday Beg	<input type="text"/>	Tuesday End	<input type="text"/>
Wednesday Beg	<input type="text"/>	Wednesday End	<input type="text"/>
Thursday Beg	<input type="text"/>	Thursday End	<input type="text"/>
Friday Beg	<input type="text"/>	Friday End	<input type="text"/>

Step 2:

Position(s) qualified for:

Switchboard Monday_Backups Add_Employee Delete_Employee

Delete Employee

Select Employee:

Switchboard Monday_Backups Add_Employee Delete_Employee Update_Employee Wednesday

Update Employee Info

Select Employee:

Availability (hh/ss/00 AM/PM)

Sunday Beg	<input type="text"/>	Sunday End	<input type="text"/>
Monday Beg	<input type="text"/>	Monday End	<input type="text"/>
Tuesday Beg	<input type="text"/>	Tuesday End	<input type="text"/>
Wednesday Beg	<input type="text"/>	Wednesday End	<input type="text"/>
Thursday Beg	<input type="text"/>	Thursday End	<input type="text"/>
Friday Beg	<input type="text"/>	Friday End	<input type="text"/>

Trained in new area?

Search for Backups

Switchboard Add_Employee Sunday_Backups

Sunday Backups



Senority	Name	Beginning	Ending
108	Tien	1:30:00 PM	10:00:00 PM
109	Tuan	1:30:00 PM	10:00:00 PM
111	Brenda	1:30:00 PM	10:00:00 PM
113	Ryan	1:30:00 PM	10:00:00 PM
4			

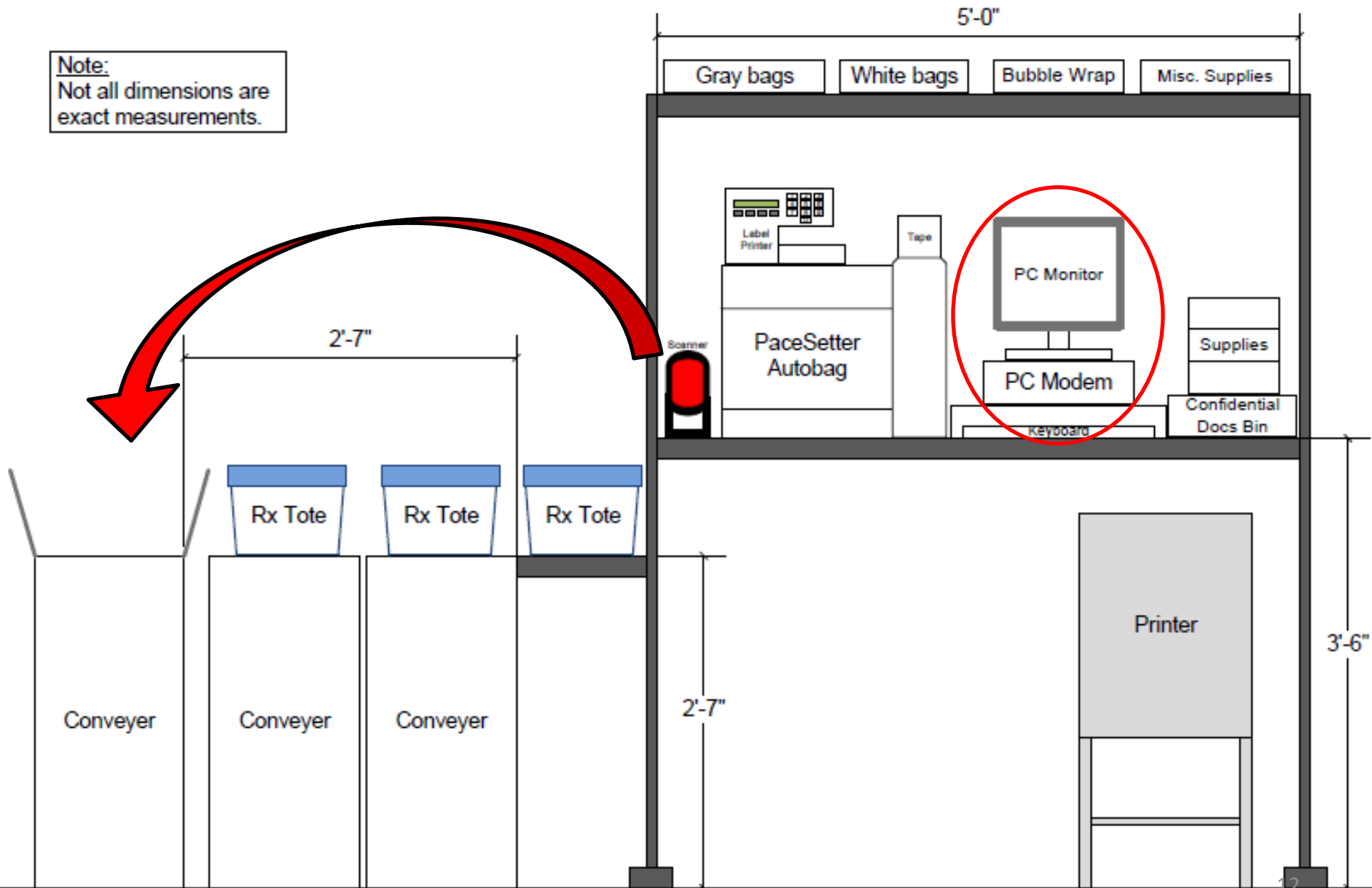
Workstation Redesign

- Current arrangement
- New arrangement
- MTM Analysis



Conveyer Belt on Left Hand Side

Note:
Not all dimensions are
exact measurements.



Ergonomic Priority

Job Hazard Score
32.0

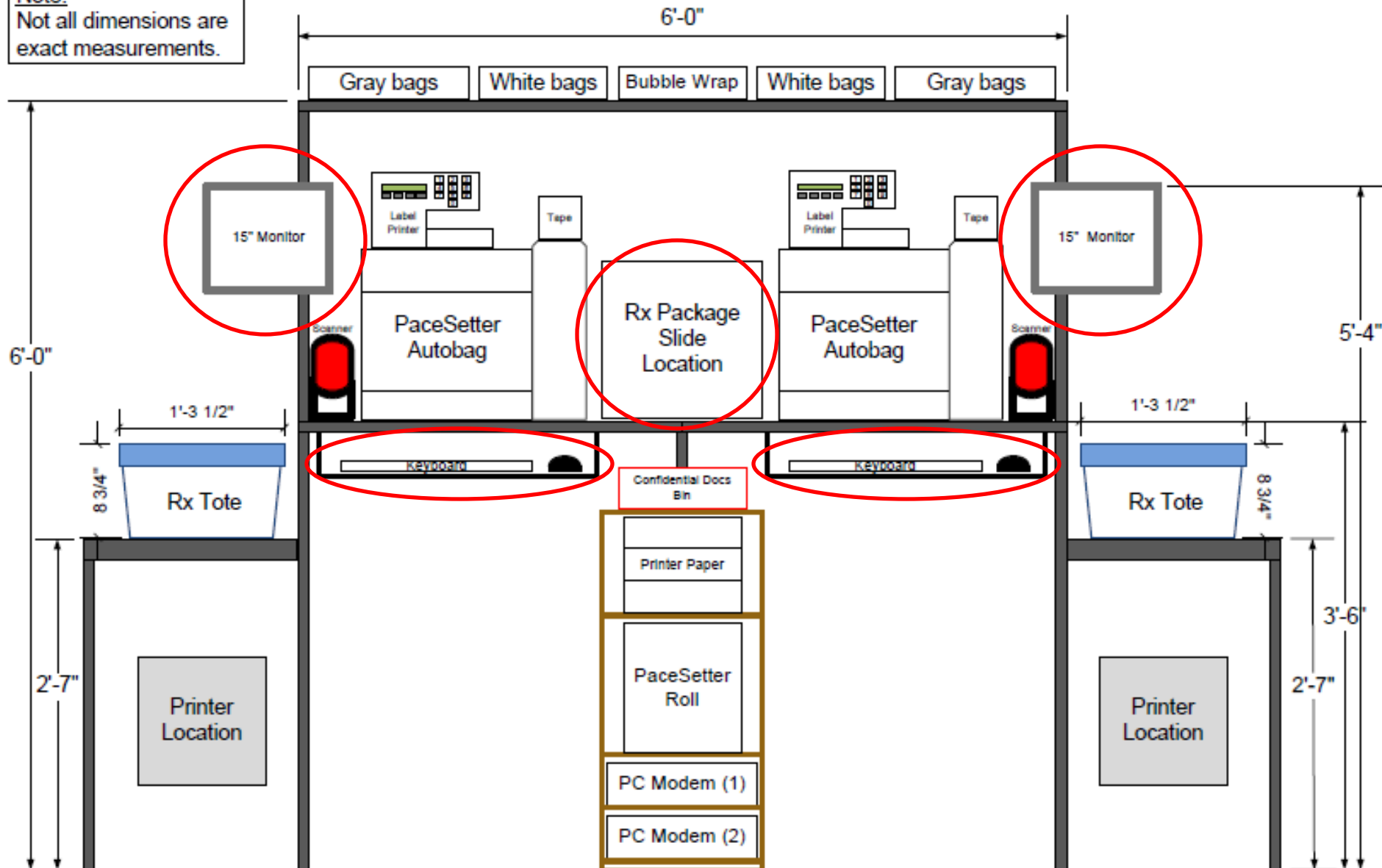
Hand/Wrist		Elbow		Shoulder		Neck	Back	Legs
Left	Right	Left	Right	Left	Right			
High	High	Medium	High	Medium	High	Medium	Medium	Low

Operators rotate to different workstations at the Tote Packing operation. A Job Hazard Score of 32.0 is for a seated operator. A standing operator would have a Job Hazard Score of 28.0 assuming a raised shoulder posture would be minimized for one arm and back twisting would be minimized.



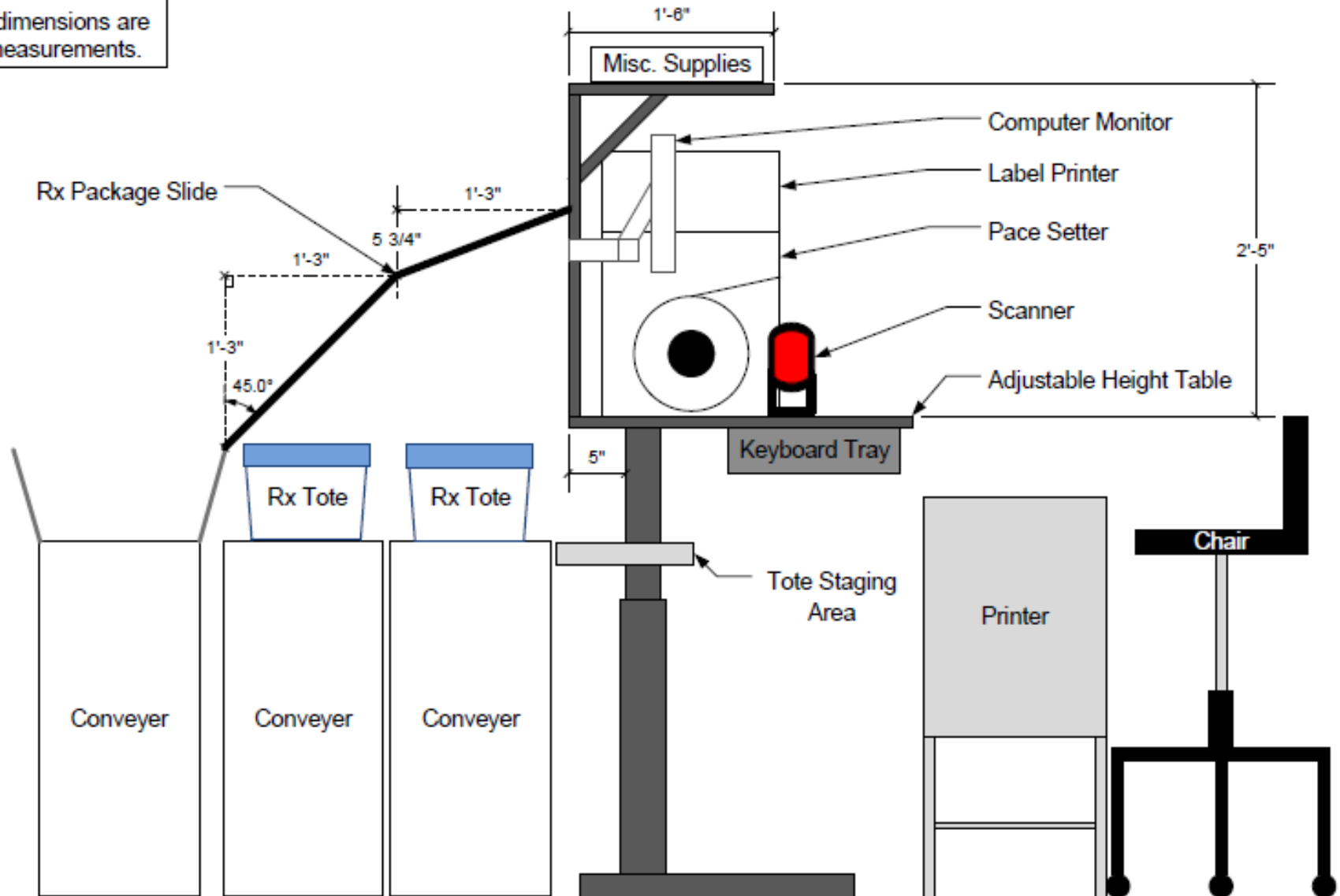
Kaiser Permanente Workstation - New Design - Front View

Note:
Not all dimensions are
exact measurements.



Kaiser Permanente Workstation - New Design - Side View

Note:
Not all dimensions are
exact measurements.



MTM Analysis

- Motions eliminated per cycle (6):
 - Turn torso 90° left
 - Turn torso back 90°
 - Turn torso 90° right
 - Turn torso 30° left
 - Release sealed package (by tossing onto conveyor)
 - Turn torso back 30° facing PaceSetter
- Related strains: Elbow, neck, back, shoulder, wrist, & eyes
- Average cycle time: 19.44 seconds
- Over 8 hour shift: 8,640 motions saved
 - 7,200 twists of torso
 - 1,440 elbow extension

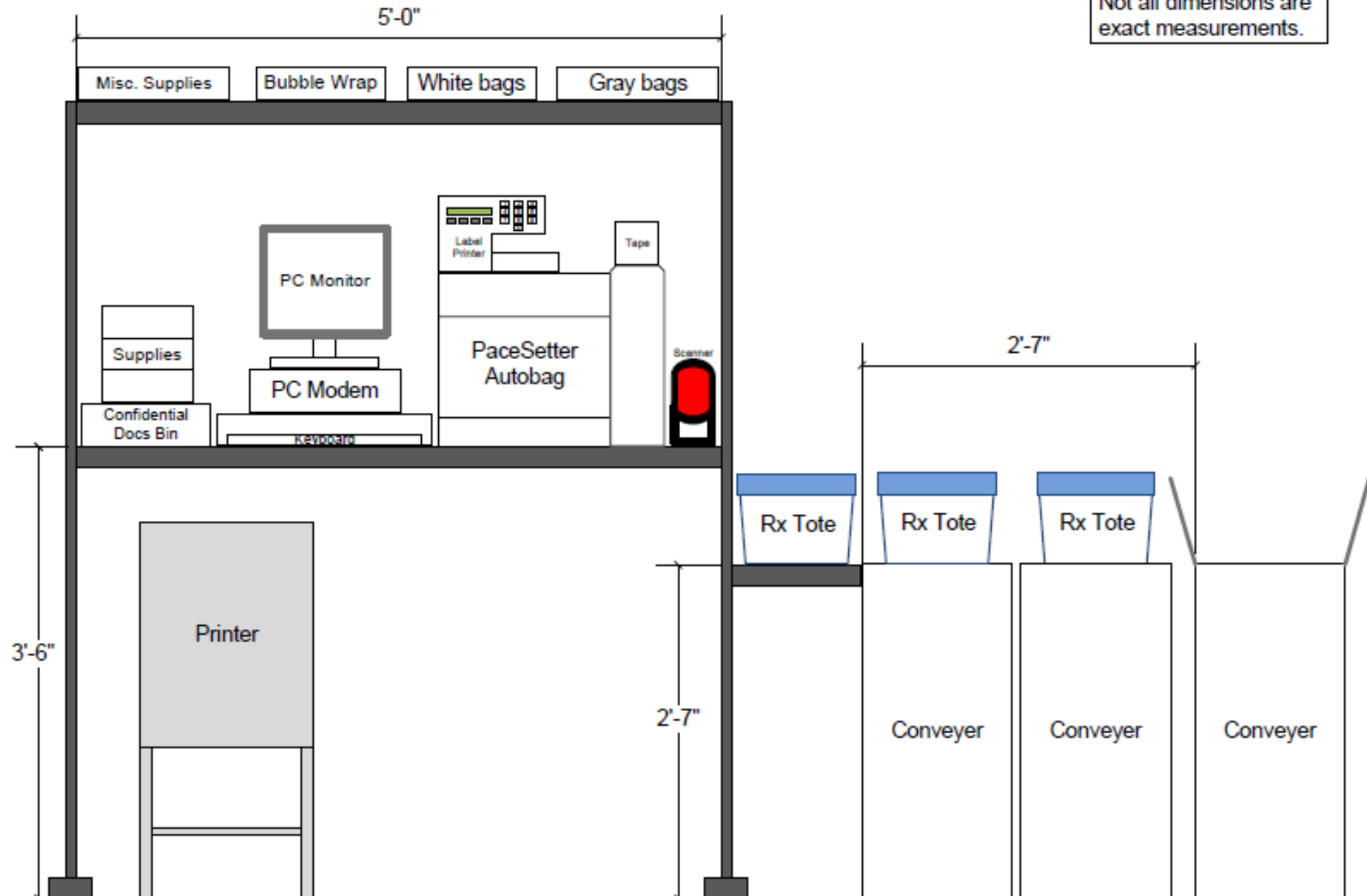
Questions?

Additional Slides for Final Presentation



Conveyer Belt on Right Hand Side

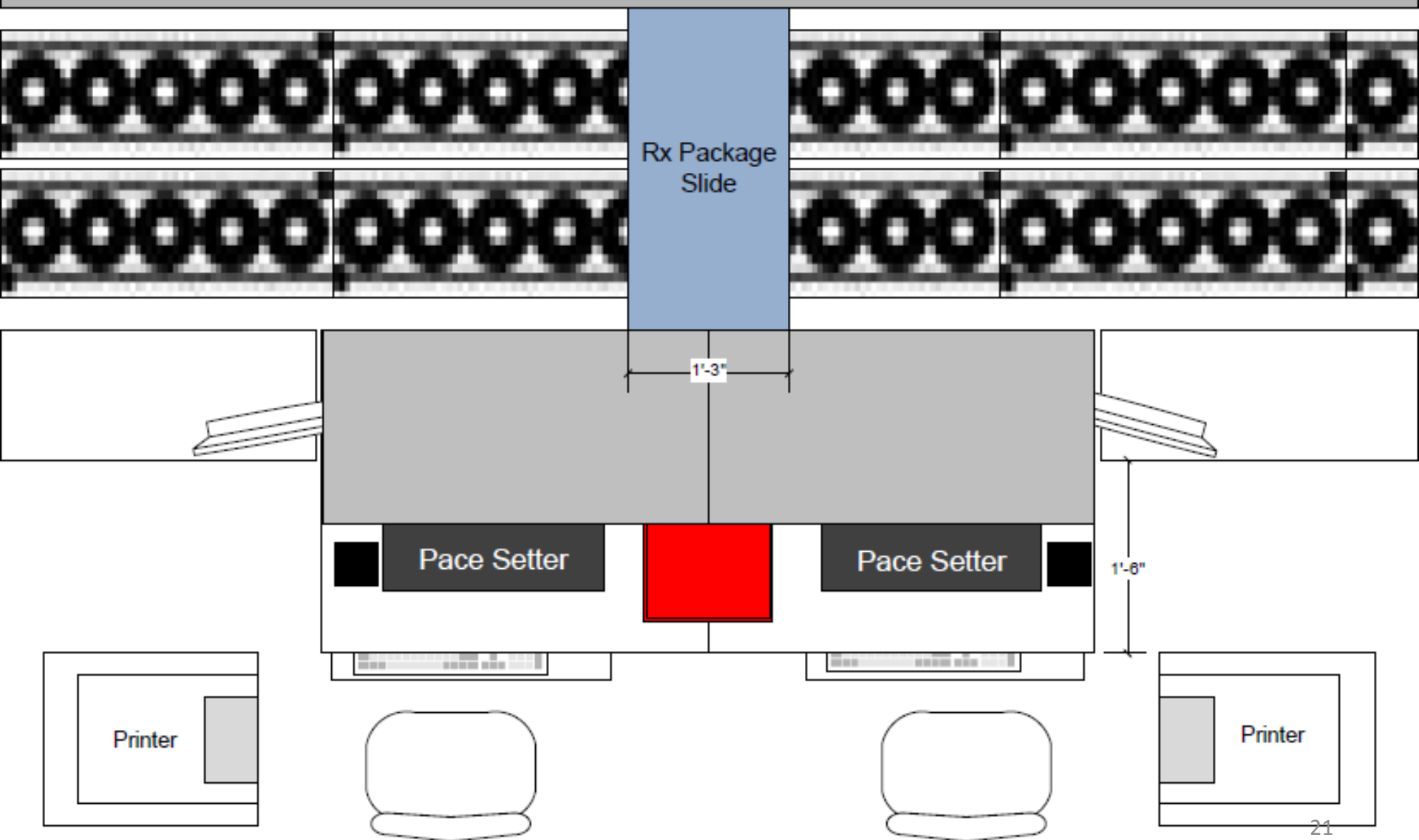
Note:
Not all dimensions are
exact measurements.



Note:
Not all dimensions are
exact measurements.

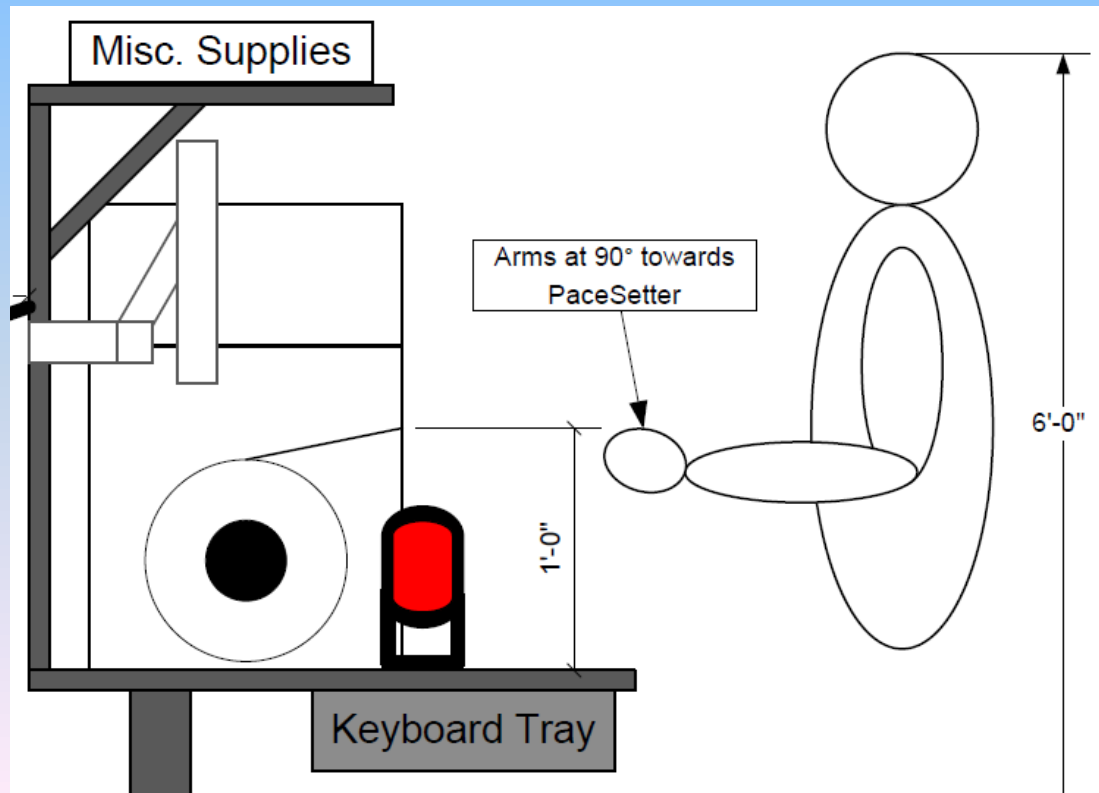
Kaiser Permanente Workstation - New Design – Top View

Conveyer Belt



Workstation Height Standards

- Arms at 90 angle towards PaceSetter
- Adjust table to align hands with dispenser
- Display guidelines at workstations



Conclusion

- More space efficient /Space reduction
 - Higher space utilization
- Ergonomically optimal
- Set Standards on how to setup workstation

Cost Analysis

- Microsoft Access
 - Access 2010: \$139.99 per license (+ shipping)
 - Access 2007: \$100-\$130 per license (+ shipping)
- Computer Monitor Arm
 - \$150 – \$350
- Keyboard Tray
 - \$100 - \$150
- Foot mat
 - \$10-\$20
- Total Workstation Additions: \$260 - \$520
- Table: www.ergosource.com

Problem Areas

- Scheduling/assigning process
- Packing workstations