

Risk Management and Maintenance

Enno Jakobson

Challenger Motor Freight Inc.



Maintenance Policy

■ Culture

- What do you want your maintenance program do for you?
- Positive image
- Retention of drivers and technicians
- Financial return on disposal of equipment
- Optimized operating costs

Mitigate liability

- Notice of action
 - Failed to keep the defendant truck in proper repair
 - Failed to apply the brakes of the motor vehicle, or properly or in time to avoid an accident, or in the alternative, he was driving a motor vehicle whose brakes were defective
 - Failed to keep his headlights or parking lights in proper working order

Maintenance Policy

- Speed control
- Increased speed results in
 - Increased accident severity
 - Increased brake maintenance costs
 - Power train impacts
 - Premature lubricant breakdown
 - Increased fuel consumption

Preventative Maintenance Schedules

Do Not Change Engine Oil At This Time

****TRUCK INTERIOR****

- 1. Check All Instruments & Dash Lights
- 2. Check All Accessories Operation
- 3. Check Electric & Air Horns
- 4. Check Wiper & Washer Operation
- 5. Check Mirrors & All Glass
- 6. Check Interior Cleanliness
- 7. Check Safety Sticker - Month _____

Year _____

- 8. Affix Service Due Sticker to Windshield

****FLOOR LEVEL****

- 9. Check Lights & Reflectors
- 10. Check Emergency Equipment
- 11. Oil Door Hinges & Locks
- 12. Drain All Air Tanks
- 13. Check Trailer Light Cord & Air Lines
- 14. Fill Auto-Lube Reservoir if Equipped
- 15. Lube 5th Wheel, Check & Adjust if Needed

****ENGINE COMPARTMENT****

- 16. Take Oil Sample
- 17. Check For Any Fluid Leaks
- 18. Drain Fuel Filter Water Trap
- 19. Check And Top Up All Fluid Levels
- 20. Visually Inspect Engine Compartment
- 21. Test Batteries
- 22. Clean Battery Terminals

****UNDER CHASSIS****

- 23. Check Clutch Adjustment & Operation
- 24. Check Brake Clutch Operation
- 25. Inspect And Grease Drivel Line
- 26. Grease All Fittings
- 27. Visually Check Frame And Suspension
- 28. Check Brake Adjustment - Adj. as

Required

TRACTOR A SERVICE

VENDOR NAME: _____

TRACTOR # _____

****WHEELS****

- 29. Check Tire Condition
- 30. Check All Tire Air Pressures
Tractor Steer 95% psi
Tractor Drive 90% psi
- 31. Replace All Missing Valve Caps
- 32. Retorque Wheels

COMMENTS:

COMPLETED BY: _____

DATE: _____

Scheduled PM A

Challenger Motor Freight Inc.

Page: 1

Work Order: 163391

UNIT INFORMATION

Unit: 2664
 Serial#: 4V4NCPH64N353066
 Assigned: 01
 DIST 195431.000 XMS

2004 VOLVO
 Make: VOLVO, INC.
 Model: CONV
 Year: 2004

REPAIR SHOP

Facility: 021 Shop: TRUCK
 User: LONPARTS
 Priority:

Status: Open
 Opened: 06/11/04 Closed: 00/00/00
 Requested Completion: 00/00/00 0:00:00
 Reason: 08 PREVENTIVE MAINTENANCE

Unit is currently under warranty VOLEXT

ACTIVITY DETAIL

Ln	Activity	Estimate	Actual	Shop	Employee	Item	Description	Quantity
----	----------	----------	--------	------	----------	------	-------------	----------



1	PM TRKA / 11 CM012P*PERFORM PM A TRACTOR SE .98 Do Not Change Engine Oil At This Time ****			TRUCK	1973	FF5369W 15W40	FILTER, FUEL ISM EG OIL, 15W40 SEMI SYN	1.000 EA 8.000 EA
	****TRUCK INTERIOR****							
	() 1. Check All Instruments & Dash Lights							
	() 2. Check All Accessories Operation							
	() 3. Check Electric & Air Horns							
	() 4. Check Wiper & Washer Operation							
	() 5. Check Mirrors & All Glass							
	() 6. Check Interior Cleanliness							
	() 7. Check Safety Sticker - Month _____ Year _____							
	() 8. Affix Service Due Sticker to Windshield							

	****FLOOR LEVEL****							
	() 9. Check Lights & Reflectors							
	() 10. Check Emergency Equipment							
	() 11. Oil Door Hinges & Locks							
	() 12. Drain All Air Tanks							
	() 13. Check Trailer Light Cord & Air Lines							
	() 14. Fill Auto-Lube Reservoir if Equipped							
	() 15. Lube 5th Wheel, Check & Adjust if Needed							

	****ENGINE COMPARTMENT****							
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	() 21. Test Batteries							
	() 22. Clean Battery Terminals							

	****UNDER CHASSIS****							
	() 23. Check Clutch Adjustment & Operation							
	() 24. Check Brake Clutch Operation							
	() 25. Inspect And Grease Driveline							
	() 26. Grease All Fittings							
	() 27. Visually Check Frame And Suspension							
	() 28. Check Brake Adjustment - Adj. as Required							

Preventative Maintenance Schedules

- PM B 100,000 kms.
- 104 items checked
- Oil drained
- Brake checks
 - Air pressure drop
 - Lines and routing
- Coolant system pressure checked

Preventative Maintenance Schedules

VENDOR _____

- 1. Check Lights & Reflectors
- 2. Check Mudflaps
- 3. Check Tires & Air Pressure
Trailer All 90 psi
- 4. Check For Rim Tightness & Cracks
- 5. Check Hub Oil Levels
- 6. Check Glad Hand Rubbers
- 7. Check Trailer Walls Int/Ext
- 8. Check Kingpin & Pickup Plate
- 9. Check Roof
- 10. Check Operation Of Doors
- 11. Grease Slack Adjusters
- 12. Grease Cam Bushings
- 13. Adjust Brakes
- 14. Check Brake Linings
- 15. Check Brake Drums
- 16. Lube Clevis Pins
- 17. Check Air Lines
- 18. Check Frame
- 19. Check Suspension
- 20. Check For Air Leaks
- 21. Drain Air Tanks
- 22. Check Bogie Pins & Operations
- 23. Grease Bogie Rails
- 24. Check & Grease Landing Gear
- 25. Check Door Holdbacks
- 26. Annual Inspection M _____ D _____ Y _____
- 27. Check Floor
- 28. Check Condition of ICC Bumper
- 29. Retorque Wheels

PMA SERVICE

TRAILER: _____

COMMENTS:

Completed By: _____

Date: _____

Mobile Inspections



Vehicle Replacement Strategy

- Age vs mileage
 - \$3,000.00-\$5,000.00 per model year
 - 1,000,000 kms
- Impact on costs
 - Running costs can double
- Technological obsolescence
 - Missed opportunities
- Cost of new technology

Technicians

- Certification
 - 5 year apprenticeship program
- On-going training
 - Outside formal training
- Supplier role
 - Training updates
- 24/7 coverage
- Breakdown board

Self-paced programs

Welcome!! i
INTRODUCTION 1
SUPPLY COMPONENTS 3
Air Compressor 3
Governor 6
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DELIVERY COMPONENTS 18
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The Pressure's On: Air Brakes TEST MARK YOUR CHOICE ON THE ANSWER SHEET

- A-1 Quick release valves accelerate the release of brakes by exhausting brake chamber air through the valve's exhaust port.
A) True
B) False
- A-2 When the push/pull valve is opened (knob pushed in), the parking brakes are
A) applied
B) released
- A-3 From a driving condition, all brakes released, how do you apply the trailer parking brakes only?
A) pull the yellow knob out
B) pull the red knob out
C) pull both knobs out
- A-4 During parking brake release, air is exhausted from the parking/emergency chamber.
A) True
B) False
- A-5 The Bobtail Proportioning Relay Valve works together with the Antilock Brake System to reduce the chance of wheel lock and skidding in emergency stops.
A) True
B) False

Electronic Work Orders

Session B - [24 x 80]

File Edit Transfer Appearance Communication Assist Window Help

F5P1DTK DISPLAY Display History Work Order 06/11/04 15:06:11
 WO: 152741 2003 VLVWH / VNM64T Crew: 0 ****Comments****
 Created By: STEPHANEG Opened: 04/17/04 **Approved**
 Unit: 2468 Serial: 4V4NC9RG33N336062
 Facility: 03 Dept: TRUCK Assgnd 01 Cost Code: INT
 Owned Pty: Reason: 08
 DIST 355869.000 KMS PREVENTIVE MAI WO Cost: 1025.21
Unit is currently under warranty.
 C=Comments L=Labor W=Warranty 6=Print 7=Reason
 ---Repair--- Part -Sts-
 ? Ln Component Tk Hours Employee Description Fail C W
 1 PM TRKA 11 2.95 2620 PERFORM PM A TRACTOR SERVICE C C
 2 02 010 05 .91 8213 INSPECT MIRRORS C C
 3 02 035 02 .27 2620 REPLACE WINDSHIELD WIPER & W C C
 4 53 001 01 1.08 8213 REPAIR TIRE CHAINS C C
 5 34 002 01 .85 2620 REPAIR LAMPS - REAR, TAIL, S C C
 6 34 004 01 .40 2620 REPAIR CLEARANCE/MARKER/INTE C C
 7 44 002 02 .38 8213 REPLACE FILTERS E C
 8 13 007 02 .35 2620 REPLACE BRAKE LINES AND FITT C +

F3=Exit F6=Print F10=Actions F14=Comments F15=Override Fac F16=Parts
 F17=Warranty F19=Cost Detail F20/F13=Sublet F21=GL Accts F22=Alt View

MA b 13/002

Start | Inbox - Micro... | Session A - [...] | Session B - ... | shop on 'cam... | Document1 - ... | 3:07 PM

Electronic Unit Files

The screenshot shows a terminal window titled "Session B - [24 x 80]" with a menu bar (File, Edit, Transfer, Appearance, Communication, Assist, Window, Help) and a toolbar. The main content displays "Equipment Repair History" for unit 2468 on 06/11/04 at 15:05:55. It lists various repair tasks with columns for Component, Tk, Unit, Description, W.O., Labor, and Part. A footer shows function key shortcuts (F3=Exit, F4=Prompt, F15=Totals, F17=Subset, F22=Alt View) and the number 05/002. The Windows taskbar at the bottom shows the Start button, open applications (Inbox - Micro..., Session A - [...], Session B - ...), and system tray icons (Shop on 'cam...', Document1 - ..., Soft, 3:07 PM).

```
FNMYDFK      DISPLAY      Equipment Repair History      06/11/04 15:05:55

Equip
Group  Unit      Component Task  Work
  235   2468

Type options, press Enter.
5=Display Work Order
? Component Tk Unit      Description      W.O.      Labor      Part
- PM TRKA   11 2468    PERFORM PM A TRACTOR S    152741    191.75    33.70
- PM TRKA   11 2468    PERFORM PM A TRACTOR S    122551     58.50    23.84
- PM TRKA   11 2468    PERFORM PM A TRACTOR S     96358     60.75    27.61
- PM TRKA   11 2468    PERFORM PM A TRACTOR S     73786     47.25     4.20
- PM TRKB   11 2468    PERFORM PM B TRACTOR S    160408    200.85   120.19
- PM TRKB   11 2468    PERFORM PM B TRACTOR S    137025    185.25   136.19
- PM TRKB   11 2468    PERFORM PM B TRACTOR S    110050    111.60   143.11
- PM TRKB   11 2468    PERFORM PM B TRACTOR S     84203    132.75   142.22
- PM TRKDOT 11 2468    PERFORM ANNUAL INSPECT    161758    135.20     8.3 +

F3=Exit  F4=Prompt  F15=Totals  F17=Subset  F22=Alt View

MA  b                               ↑A                               05/002
```

VMRS Code Analysis

FNRTPFK MELISSAS
06/30/04 15:43:16

Challenger Motor Freight Inc.
Equipment Cost per Metric

Date range.....: 05/01/04 - 05/31/04 Open Work Orders...: Include All
Unit.....: Equipment Type...: HIWAY Unit Status...: Active Include Billable Lines: Y
Equipment Group: Assigned Facility: Metric: DIST

COST/METRIC BY REASON CODE - Summary Report

Reasons selected: ALL

<u>Reason</u>	<u>Unit</u>	<u>Cost</u>	<u>Cost/DIST</u>
Reason 34 Total.....:		140.40	.000
Reason 38 Total.....:		11,126.09-	.001-
Reason 41 Total.....:		3,240.10	.000
		=====	=====
Grand Total.....:		777,497.84	.039

COST/METRIC BY VMRS CODE - Summary Report

Component range: - Task range: -

<u>Description</u>	<u>Component</u>	<u>Task</u>	<u>Cost</u>	<u>Cost/DIST</u>
System PM Total			57,555.77	.003
System S36 Total			802.61	.000
System TV Total			10,534.53	.001
System UTS Total			366.91	.000
System 01 Total			63,385.50	.003
System 02 Total			82,172.52	.004
System 03 Total			10,369.81	.001
System 04 Total			7,515.72	.000
System 11 Total			51.75	.000
System 13 Total			54,387.44	.003
System 14 Total			12,781.25	.001
System 15 Total			22,742.07	.001
System 16 Total			19,468.98	.001
System 17 Total			72,809.28	.004
System 18 Total			4,229.00	.000
System 19 Total			238.05	.000
System 21 Total			710.61	.000
System 22 Total			4,140.32	.000
System 23 Total			12,843.57	.001
System 24 Total			7,105.15	.000
System 26 Total			17,800.16	.001
System 27 Total			500.21	.000
System 29 Total			126.97	.000
System 30 Total			51.72	.000
System 31 Total			7,687.99	.000
System 32 Total			19,451.08	.001

Reason Code Analysis

FNRTPFK MELISSAS
06/30/04 15:43:16

Challenger Motor Freight Inc.
Equipment Cost per Metric

Date range.....: 05/01/04 - 05/31/04 Open
Unit.....: Equipment Type...: HIWAY
Equipment Group: Assigned Facility:

Work Orders...: Include All
Unit Status...: Active Include Billable Lines: Y
Metric: DIST

METRIC INFORMATION - Summary Report

Component range: - Task range: -
----- DIST -----
Unit Cost Accumulation Cost/Metric
Total: 777,497.84 19762983.0 .039 .0 .0

INTERNAL/EXTERNAL - Summary Report

Component range: - Task range: -
---- Internal Incidents ----- External Incidents -----
Metric Unit # of Cost Cost/Metric # of Cost Cost/Metric
DIST Total: 1291 595,673.26 .030 554 181,824.58 .009

COST/METRIC BY REASON CODE - Summary Report

Reasons selected: ALL

Reason	Unit	Cost	Cost/DIST
Reason SU Total.....:		892.36	.000
Reason 01 Total.....:		101,039.51	.005
Reason 04 Total.....:		360,994.87	.018
Reason 05 Total.....:		38,559.10	.002
Reason 07 Total.....:		13,093.88	.001
Reason 08 Total.....:		215,706.13	.011
Reason 09 Total.....:		70.38	.000
Reason 10 Total.....:		64.17	.000
Reason 13 Total.....:		300.00	.000
Reason 22 Total.....:		2,798.62	.000
Reason 23 Total.....:		3,091.35	.000
Reason 31 Total.....:		1,449.04	.000
Reason 32 Total.....:		47,184.02	.002

Driver's Role Reporting Defects

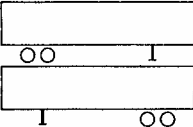


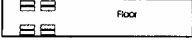
- Pre and Post-trip inspections
- Daily inspections
- Lawful requirement

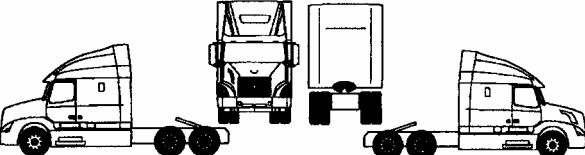
CHALLENGER MOTOR FREIGHT INC.
DRIVER MAINTENANCE REPORT

SH006/1103

Request for repairs (use separate form for tractor & trailer)
 Damage report

Tractor Trailer Unit # 2323 Mileage (km) 142,802 Date 1/27/04
Make FRHT PIA (date & time) 1/27/04

		 Roof
		 Floor



Drivers Description & Location of Required Repairs (PRINT!)

1. left turn signal not working
-
-
-
-

Contact # _____
Drivers Name (Print) Ken Mack Signature Ken Mack

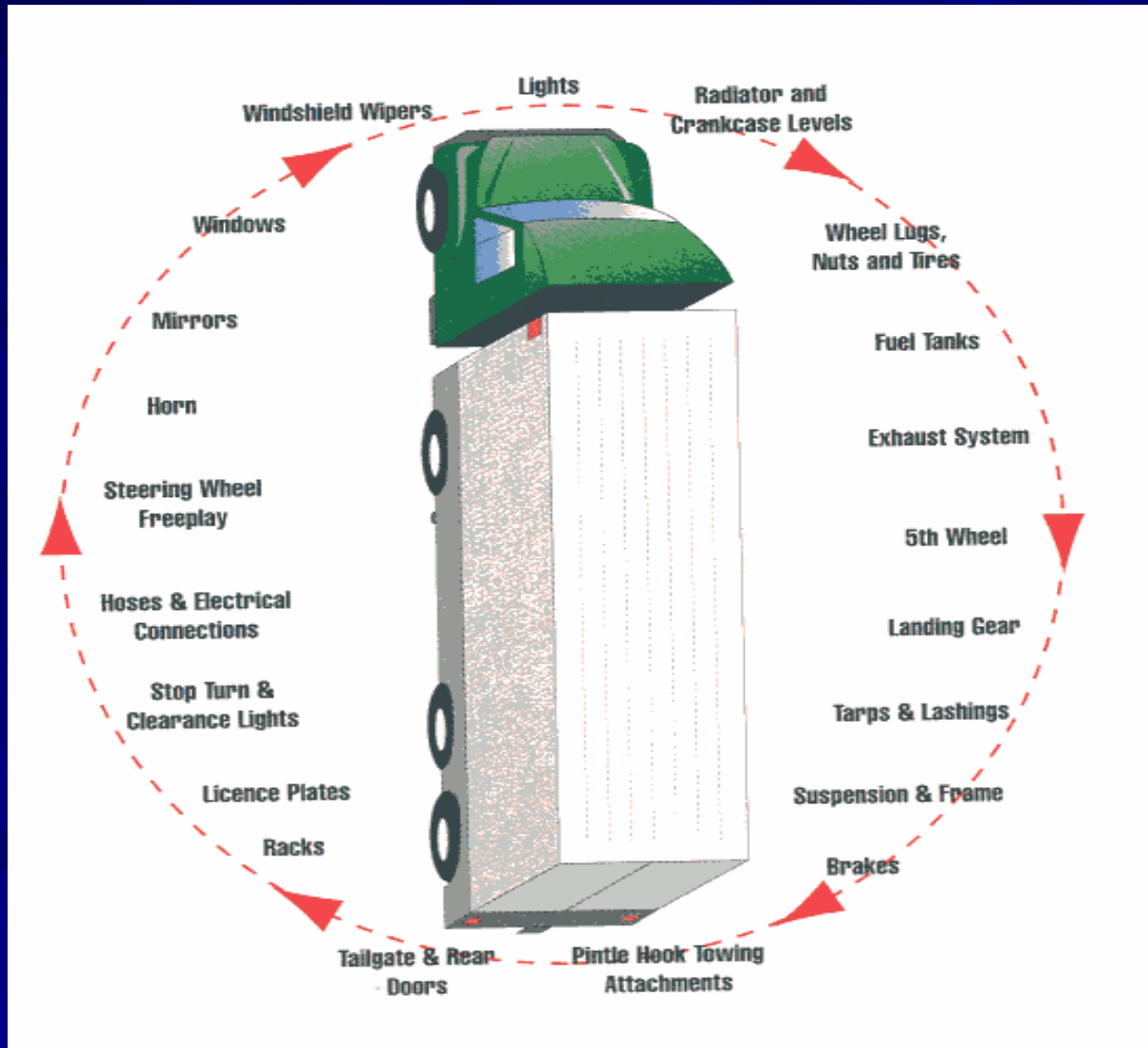
Shop comments, instructions to driver
 All repairs complete Following listed repairs incomplete

Parts on order - expected in _____ days
 Vehicle may be operated with above incomplete repairs

Shop _____
signature _____ Part Name _____ Date _____

White Copy - Foreman's Copy Canary Copy - Mechanic's Copy Pink Copy - Leave in Book

Driver Training Manuals



On-road Performance

■ CVOR

- Ontario based Commercial Vehicle Owner Registration
- Safety rating point system based upon on-road performance

■ Safestat

- United States safety rating point system based upon on-road performance

Controlling Quality

- Absolute liability
 - \$50,000.00 fine for wheel-off's
- Maintaining control of quality on outside repairs
 - National accounts
 - Preferred vendor list

Spec'ing for Safety

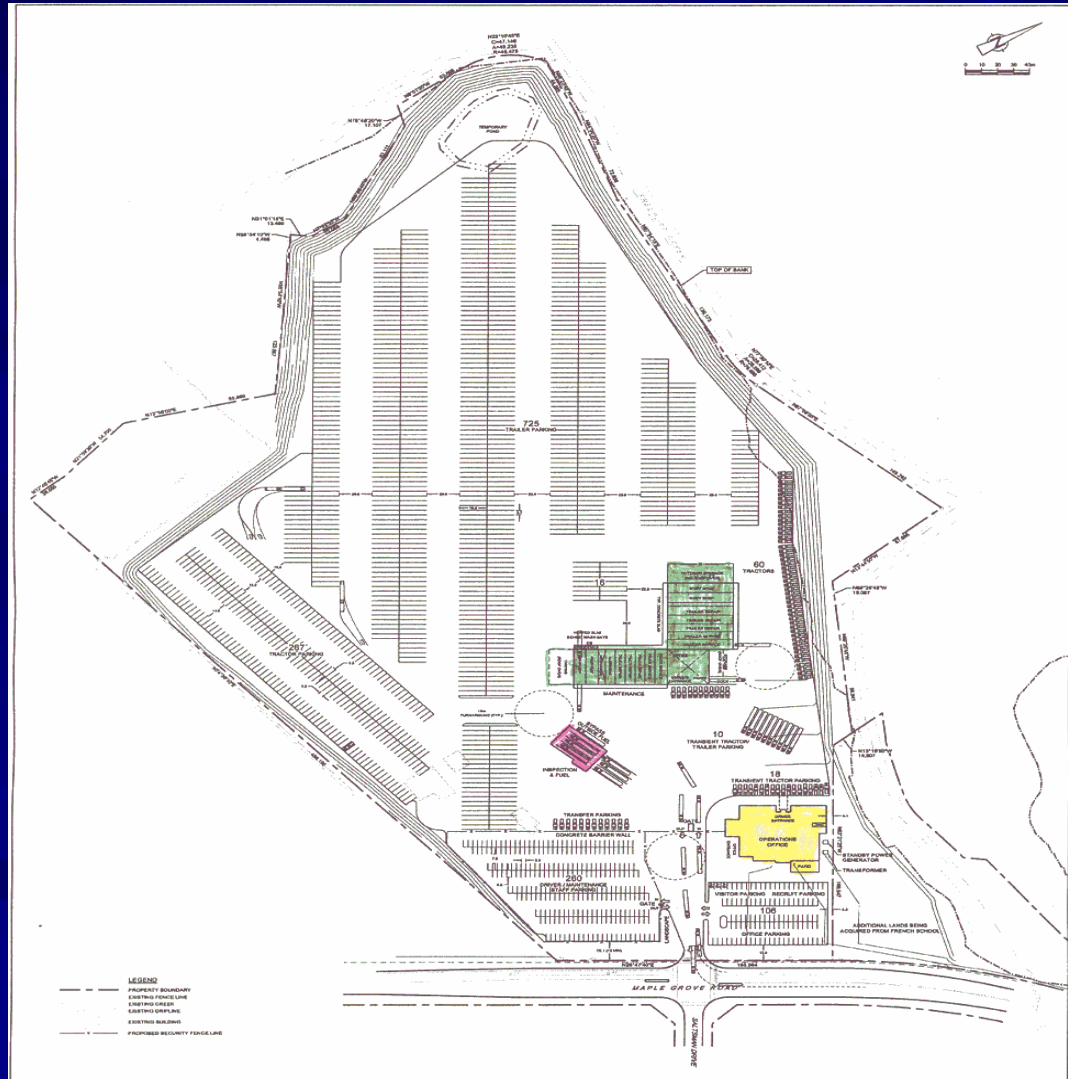
- Synthetic lubes
- Greaseless components
- LED lighting
- Logistic tracking in trailers
- Auto slacks



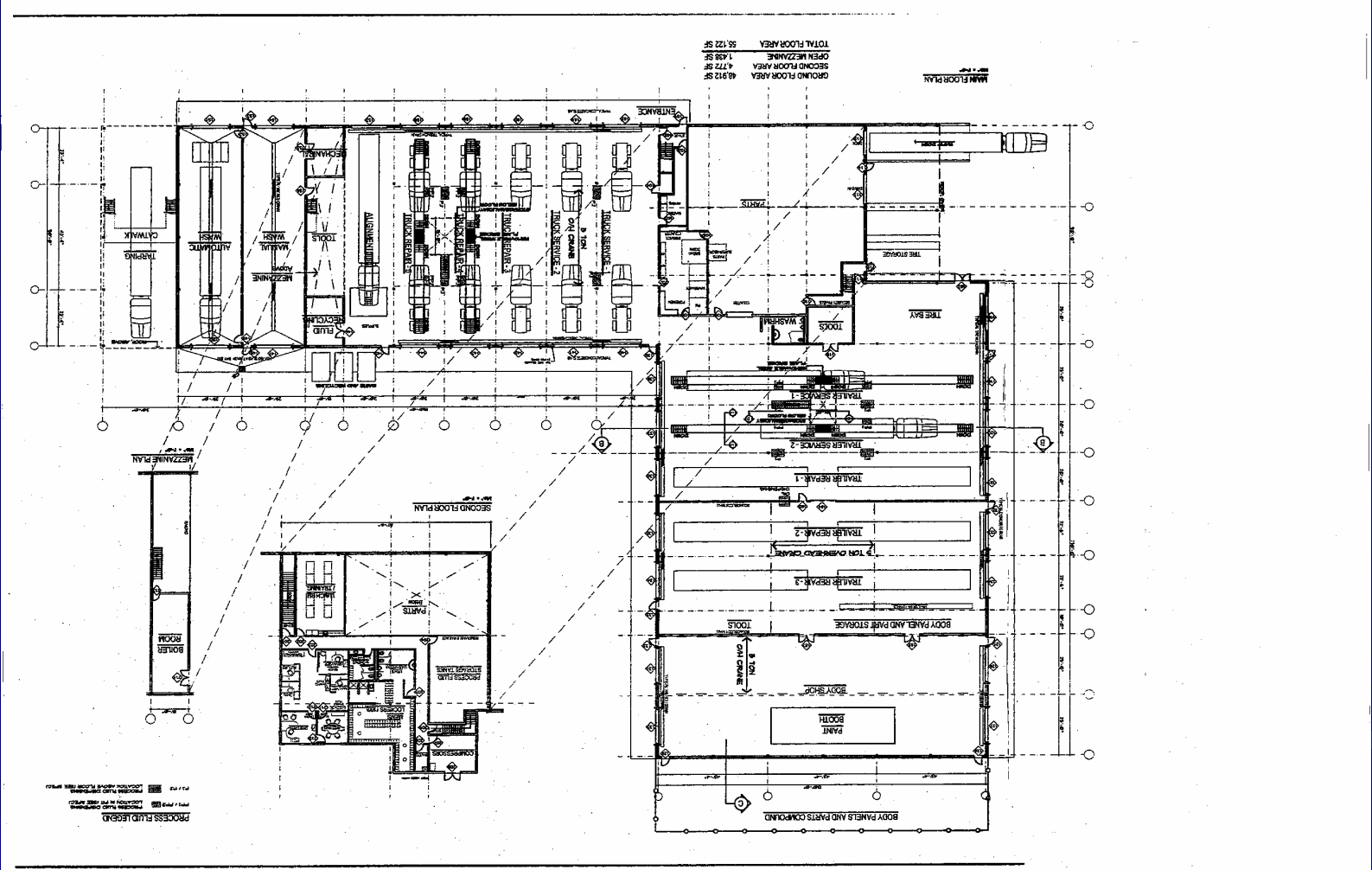
Driving Simulator

- Ability to create driving hazards without risk
 - Brake failure
 - Tire blowout
 - Various road conditions
 - Load configurations

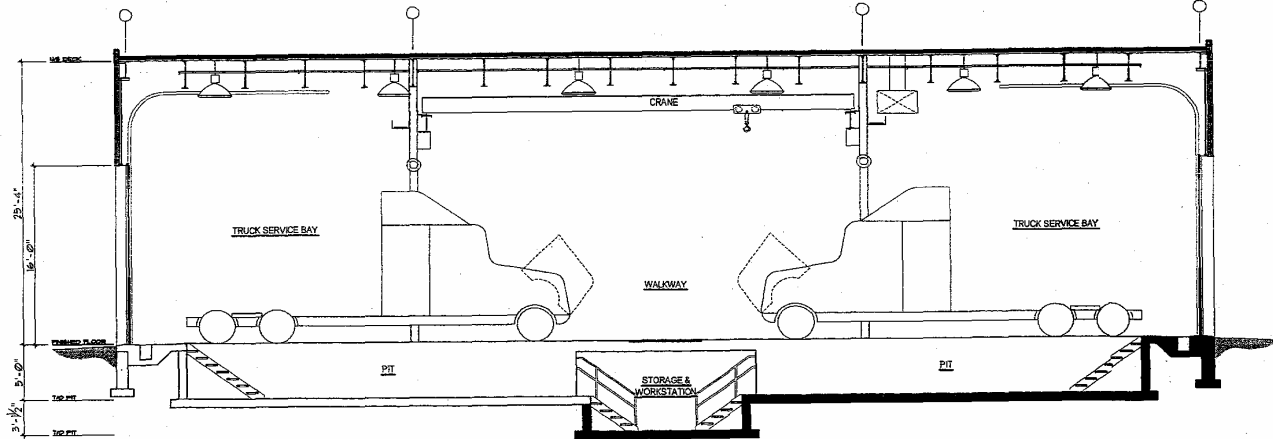
Terminal Layout



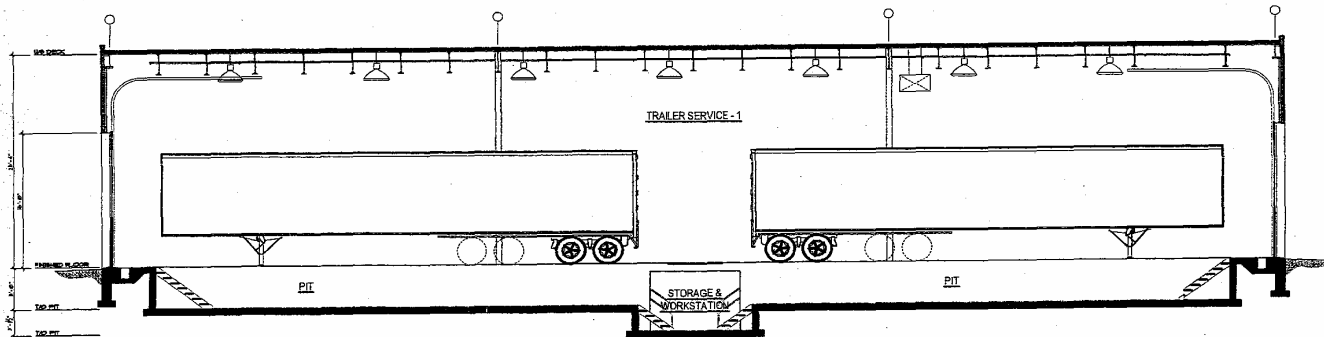
Shop Design



Pit Design

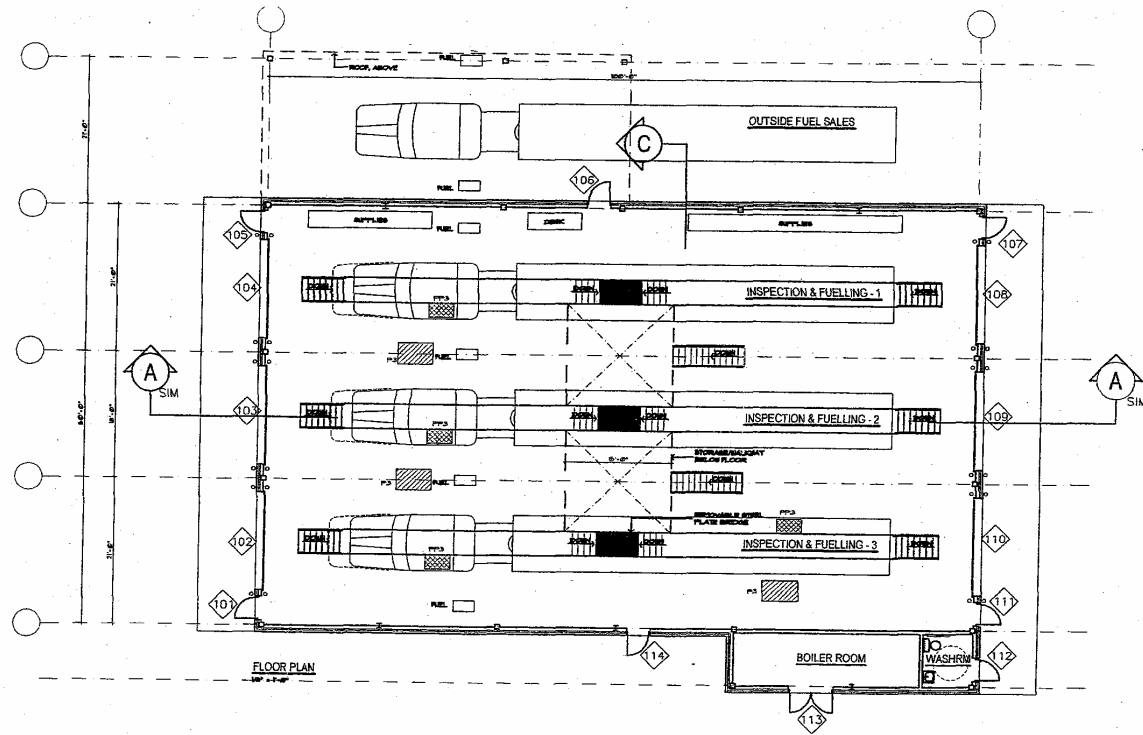


BUILDING CROSS-SECTION A-A
3/8" = 1'-0"



BUILDING CROSS-SECTION B-B
3/8" = 1'-0"

Safety Lanes



Safety Lanes

- Wheel alignment Checks
- Reduction in tire wear



Safety Lanes

- Electronic tire pressure checks
- Electronic reading of tire pressures and tire temperatures as units come into the shop



Safety Lanes

- Safety inspections for every unit entering the terminal
- Repairs which can be completed within 15-20 minutes
- Operating 24/7
- Improved safety

Risk Management and Maintenance

- Proactively mitigating liability and costs through maintenance