

File No.: 04-1000-20-2023-725

April 15, 2024

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am writing regarding your request dated November 21, 2023 under the ***Freedom of Information and Protection of Privacy Act*** for:

**All records about the maintenance and repair of the Stanley Park Train. Date range: September 1, 2023 to November 20, 2023.**

All responsive records are attached. Some information in the records has been severed (blacked out) under s.13(1), s.15(1)(l), and s.22(1) of the Act. You can read or download these sections here: [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/96165\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96165_00).

Under section 52 of the Act, and within 30 business days of receipt of this letter, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, [info@oipc.bc.ca](mailto:info@oipc.bc.ca) or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (#04-1000-20-2023-725); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,

*[Signed by Cobi Falconer]*

**Cobi Falconer, MAS, MLIS, CIPP/C**  
**Director, Access to Information & Privacy**  
[cobi.falconer@vancouver.ca](mailto:cobi.falconer@vancouver.ca)  
453 W. 12th Avenue Vancouver BC V5Y 1V4

If you have any questions, please email us at [foi@vancouver.ca](mailto:foi@vancouver.ca) and we will respond to you as soon as possible. Alternatively, you can call the FOI Case Manager at 604-871-6584.

Encl. (Response Package)

:aa

**WO # 231712**

**Open Date** 8/17/2023 9:33:54 AM

**Complete Date**

**Close Date**

**Labor** \$58,206.46

**Parts** \$13,384.77

**Fluid** \$77.53

**Commercial** \$6,038.36

**Total** \$77,707.11

**Unit Number A7737**

Job Notes		
Job	Change Time	Note
CLEAN ENGINE COVER	10/29/2023 5:30:27 PM	Sand blasted engine covers, fan shroud & fuel tank for painting .....591
CLEAN UNIT SERVICES	8/28/2023 2:45:29 PM	-emptied brake clean bottle and filled with degreaser, sprayed train and rinsed, filled bottle again, went underneath and sprayed bottom, rinsed, washed floor...1042
CLEAN UNIT SERVICES	10/24/2023 2:35:34 PM	-took unit off jack stands and put it on dollys...1042
CLEAN UNIT SERVICES	10/27/2023 2:59:58 PM	-swept floor so dolly would roll nicely, pushed outside, got pressure washer from tire shop, pressure washed unit, ran out of fuel, continued pressure washing, pushed unit back inside, cleaned up, put away pressure washer...1042
CLEAN UNIT SERVICES	10/31/2023 10:01:26 AM	-wire wheeled undercarriage and floor, scraped off leftover glue, wire wheeled again....1042
CLEAN UNIT SERVICES	11/1/2023 12:30:34 PM	-received the rust converter, talked to body shop and got supplies, got help to roll train outside, got proper ppe, put on one coat, was letting it dry but then it started to rain, rolled back inside, dried it off, applied another coat...1042
CLEAN UNIT SERVICES	11/2/2023 8:24:41 AM	-got some warm water and wiped excess rust converter off, then wiped dry, cleaned up can and paint brush...1042
FABRICATE ASSEMBLY	10/6/2023 5:52:56 PM	installed new compressor driveshaft and pulley system
FABRICATE MISC BRACKETS	11/2/2023 2:07:43 PM	rust repair, cut holes in outer frame for electrical, repair night switch hole ,and cut out old battery tray...689 repair engine covers,(cut out old broken mesh and replace with stainless woven mesh)...689
INSPECT BODY	8/28/2023 2:46:31 PM	-made a list of repair upon initial visual inspection.....1042
INSTALL CHAIN DRIVE	11/16/2023 12:18:18 PM	Install the rebuilt gear box transfer case.
INSTALL CHAIN DRIVE	11/16/2023 3:00:55 PM	Installed the rebuilt gear box transfer case. 1075,1042
OVERHAUL ASSEMBLY/DISASSEMBLY	10/11/2023 11:01:27 PM	front bogie: Not a full rebuild, as requested by user > replaced worn drive axle and wheel > replaced brake shoes > replaced journal box bearings > replaced journal wear pads > replaced oil in gear drives, one drive had some brass filings in oil.
OVERHAUL ASSEMBLY/DISASSEMBLY	10/11/2023 11:04:36 PM	rear bogie: Not a full rebuild, as requested by user > replaced journal box bearings > replaced brake shoes > replaced journal box wear pads > replaced oil in gear drives

REFINISH ASSEMBLY	11/6/2023 7:18:25 AM	Refinish - train and parts as per Quoted estimate
REFINISH PIPE	11/9/2023 6:58:04 AM	machine new exhaust pipe connectors
REFINISH POWERTRAIN	11/22/2023 12:15:47 PM	machine deeper V-groove into pulley to allow better belt fit
REMOVE ASSEMBLY	9/22/2023 12:52:03 PM	-removed drive shaft, put in parts washer....1042
REMOVE AUTOMATIC TRANS SYSTEM	10/24/2023 2:31:39 PM	-started to remove transmission, found that the engine has to be removed with the transmission attached, removed hardware and took out the engine and transmission all together, placed on jacks, removed transmission from engine and put on pallet for vendor....1042
REMOVE AUTOMATIC TRANS SYSTEM	10/24/2023 2:33:34 PM	-got engine serial number, contacted vendor re: ring gear, counted teeth on ring gear, called vendor back, asked about complete assembly, vendor called back, cannot find complete assembly only ring gear, ordered and talked to buyer...1042
REMOVE UNDERCARRIAGE	8/24/2023 7:43:34 AM	remove bogie assemblies and clean
REMOVE UNDERCARRIAGE	8/25/2023 7:36:50 AM	-removed drive shafts, took off nose cone, removed wheel assembly, unhooked air lines, lifted train up and slid boogies out, put train on jack stands, got some pallets from outside, got some offcuts from carp shop, ordered ratchet straps, put boogies on pallets.....1042/1074
REMOVE UNDERCARRIAGE	8/25/2023 2:43:46 PM	-removed air lines from passenger car boogies, removed keepers from boogies and got a box for the bolts and keepers, moved fence to get access to far side of passenger car with jack, jacked up car and moved bogie out then placed jack stands, made some room at the other end of car, jacked up car and moved bogie then placed jack stands, put both bogies on pallets and used off cuts from carp shop screwed into the pallet for chocks, took the bogies out one by one to wash....1042
REPAIR REPL AIR SUPPLY SYSTEM	11/21/2023 2:44:28 PM	started replacing air lines, took apart whistle to reseal, tested whistle, tested whistle valve...1042
REPAIR REPL AUTOMATIC TRANS SYSTEM	11/7/2023 12:34:02 PM	swap over ring gear on flywheel with the new ring gear.
REPAIR REPL AUTOMATIC TRANS SYSTEM	11/7/2023 12:35:27 PM	689
REPAIR REPL BEARING	11/6/2023 6:43:30 AM	REPLACE DUMMY WHEELS BEARINGS ON BOTH SIDE
REPAIR REPL BEARING	11/6/2023 6:44:46 AM	>REPLACED DUMMY WHEELS BOTH SIDE BEARINGS AND ADJUSTED TO SPEC.....518
REPAIR REPL BEARING	11/6/2023 10:51:59 AM	>STEAM CLEANED PARTS AND GAVE THEM TO BODY SHOP.....518
REPAIR REPL FILTER HOUSING	9/5/2023 2:45:54 PM	-removed filter housing, got fittings, fittings are different in new compared to old, installed fittings, put housing on unit....1042
REPAIR REPL GASKETS/SEALS	9/26/2023 2:50:08 PM	-cleaned sealing surface, had issues with tool, prepped surface...1042
REPAIR REPL HOSE	9/5/2023 2:47:02 PM	-sucked out fuel tank, removed fuel lines, had to cut out welded on bulk head fittings, in the process of grinding out the holes to fit grommet...1042
REPAIR REPL TRACTERBRVALVE	10/24/2023 2:31:59 PM	-ordered hand brake valve...1042
REPAIR REPL WIRING HARNESS	9/25/2023 1:05:26 PM	Deferred from Work Order# 181261. By User ID ENEQSBN on 1/28/2022 12:18 PM. There were labor charges, part charges or commercial charges with this job, please review the work order# 181261. repaired all broken connections and tested all components, working fine now. Tested for at least 45 minutes....1005
REPAIR REPL WIRING HARNESS	10/24/2023 2:30:05 PM	-removed and labeled all wires...1042
SERVICE 12 MONTH	8/28/2023 2:45:59 PM	-ordered parts, drained engine oil, ran out of time to complete...1042
SERVICE 12 MONTH	8/30/2023 11:21:48 AM	-removed fuel filter, fuel/water bowl wouldn't come off of filter, just kept spinning in both directions, looked for spares but couldn't find one so ordered new, changed engine oil filter, replaced distributor cap and rotor..1042
SERVICE 12 MONTH	9/5/2023 2:44:55 PM	-replaced flamethrower, re/re spark plugs, put wires back on
TRANSPORT COMPLETE UNIT	8/17/2023 9:35:19 AM	SEA TO SKY TRANSFER FROM STANLEY PARK TO MANYARD

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	8/24/2023 8:08:38 AM	25-320	REMOVE UNDERCARRIAGE	6.30	\$863.71	8/25/2023 6:49:46 AM
	8/24/2023 8:08:38 AM	25-320	REMOVE UNDERCARRIAGE	(6.30)	(\$863.71)	8/25/2023 6:50:03 AM
	8/24/2023 8:08:38 AM	25-320	REMOVE UNDERCARRIAGE	6.80	\$932.21	8/24/2023 2:56:55 PM
	8/24/2023 8:08:38 AM	25-320	REMOVE UNDERCARRIAGE	(6.80)	(\$932.21)	8/25/2023 6:49:46 AM
	8/24/2023 8:08:38 AM	25-320	REMOVE UNDERCARRIAGE	6.37	\$872.84	8/25/2023 6:50:03 AM
	8/24/2023 11:23:13 AM	25-320	REMOVE UNDERCARRIAGE	0.73	\$99.48	8/24/2023 12:06:47 PM
	8/24/2023 11:23:13 AM	25-320	REMOVE UNDERCARRIAGE	(0.73)	(\$99.48)	8/24/2023 2:54:38 PM
	8/24/2023 12:00:00 PM	25-320	REMOVE UNDERCARRIAGE	0.64	\$87.87	8/24/2023 2:54:37 PM
	8/25/2023 7:33:11 AM	25-320	REMOVE UNDERCARRIAGE	7.41	\$1,015.28	8/25/2023 2:57:51 PM
	8/28/2023 7:28:28 AM	06-111	INSPECT BODY	4.03	\$551.50	8/28/2023 2:52:30 PM
	8/28/2023 7:28:28 AM	06-111	INSPECT BODY	6.01	\$822.69	8/28/2023 1:28:48 PM
	8/28/2023 7:28:28 AM	06-111	INSPECT BODY	(6.01)	(\$822.69)	8/28/2023 2:52:30 PM
	8/28/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	2.77	\$379.03	8/29/2023 9:48:38 AM
	8/28/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	(2.00)	(\$274.00)	8/29/2023 9:48:39 AM
	8/28/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	2.78	\$381.09	8/28/2023 2:53:12 PM
	8/28/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	(2.78)	(\$381.09)	8/28/2023 2:53:22 PM
	8/28/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	2.00	\$274.00	8/28/2023 2:53:22 PM
	8/28/2023 1:28:46 PM	02-000	CLEAN UNIT SERVICES	1.30	\$178.40	8/28/2023 2:46:56 PM
	8/28/2023 1:28:46 PM	02-000	CLEAN UNIT SERVICES	(1.30)	(\$178.40)	8/28/2023 2:53:12 PM
	8/28/2023 2:46:54 PM	38-PRM-D52	SERVICE 12 MONTH	0.09	\$12.03	8/28/2023 2:52:11 PM
	8/30/2023 9:00:04 AM	38-PRM-D52	SERVICE 12 MONTH	2.37	\$324.16	8/30/2023 11:22:51 AM
	8/30/2023 9:15:13 AM	38-PRM-D52	SERVICE 12 MONTH	2.11	\$289.56	8/30/2023 11:22:03 AM
	8/30/2023 9:15:13 AM	38-PRM-D52	SERVICE 12 MONTH	(2.11)	(\$289.56)	8/30/2023 11:22:51 AM
	9/5/2023 7:27:20 AM	38-PRM-D52	SERVICE 12 MONTH	0.69	\$94.19	9/5/2023 8:08:36 AM
	9/5/2023 8:08:35 AM	03-044-H70	REPAIR REPL FILTER HOUSING	6.65	\$910.40	9/5/2023 2:47:19 PM
	9/5/2023 8:08:35 AM	03-044-H70	REPAIR REPL FILTER HOUSING	(6.65)	(\$910.40)	9/6/2023 7:37:36 AM
	9/5/2023 8:08:35 AM	03-044-H70	REPAIR REPL FILTER HOUSING	3.36	\$459.90	9/6/2023 7:37:36 AM
	9/5/2023 12:00:00 PM	03-044-H50	REPAIR REPL HOSE	3.00	\$411.00	9/6/2023 7:37:55 AM
	9/5/2023 2:47:18 PM	03-044-H50	REPAIR REPL HOSE	0.16	\$21.69	9/5/2023 2:56:49 PM
	9/5/2023 2:47:18 PM	03-044-H50	REPAIR REPL HOSE	(0.16)	(\$21.69)	9/6/2023 7:37:36 AM
	9/5/2023 2:47:18 PM	03-044-H50	REPAIR REPL HOSE	0.21	\$29.00	9/6/2023 7:37:36 AM

s.22(1)	9/5/2023 2:47:18 PM	03-044-H50	REPAIR REPL HOSE	(0.21)	(\$29.00)	9/6/2023 7:37:56 AM
	9/6/2023 7:30:46 AM	03-044-H50	REPAIR REPL HOSE	2.58	\$352.85	9/6/2023 10:05:19 AM
	9/6/2023 10:05:18 AM	02-044-T60	CLEAN TANK	2.48	\$340.03	9/6/2023 12:34:14 PM
	9/6/2023 10:05:18 AM	02-044-T60	CLEAN TANK	(2.48)	(\$340.03)	9/7/2023 7:54:16 AM
	9/6/2023 10:05:18 AM	02-044-T60	CLEAN TANK	1.41	\$193.40	9/7/2023 7:54:16 AM
	9/22/2023 10:18:25 AM	25-024-A00	REMOVE ASSEMBLY	2.06	\$282.18	9/25/2023 7:44:21 AM
	9/22/2023 10:18:25 AM	25-024-A00	REMOVE ASSEMBLY	2.56	\$350.99	9/22/2023 12:52:10 PM
	9/22/2023 10:18:25 AM	25-024-A00	REMOVE ASSEMBLY	(2.56)	(\$350.99)	9/25/2023 7:44:21 AM
	9/22/2023 2:45:58 PM	25-045-P30	REMOVE OIL PAN	0.05	\$6.96	9/22/2023 2:49:01 PM
	9/26/2023 6:54:14 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	8.06	\$1,104.33	9/26/2023 2:57:54 PM
	9/26/2023 6:54:14 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(8.06)	(\$1,104.33)	9/27/2023 7:21:38 AM
	9/26/2023 12:07:28 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	2.72	\$372.07	9/26/2023 2:50:25 PM
	9/27/2023 6:42:31 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.80	\$246.83	9/27/2023 8:30:39 AM
	9/27/2023 6:42:31 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(1.80)	(\$246.83)	9/27/2023 8:31:32 AM
	9/27/2023 7:37:58 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	3.40	\$465.76	9/27/2023 11:02:04 AM
	9/27/2023 11:01:57 AM	25-025-A00	REMOVE ASSEMBLY	3.93	\$537.84	9/27/2023 2:57:30 PM
	9/27/2023 12:37:32 PM	25-025-A00	REMOVE ASSEMBLY	17.84	\$2,444.54	9/28/2023 6:28:09 AM
	10/4/2023 6:13:21 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	2.39	\$327.39	10/4/2023 8:37:00 PM
	10/4/2023 8:30:13 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.88	\$531.67	10/5/2023 12:23:54 AM
	10/4/2023 8:37:13 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.76	\$515.69	10/5/2023 12:23:06 AM
	10/4/2023 8:37:13 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.76)	(\$515.69)	10/5/2023 12:23:55 AM
	10/5/2023 8:31:42 PM	21-024-A00	FABRICATE ASSEMBLY	3.74	\$512.99	10/6/2023 12:16:56 AM
	10/5/2023 8:36:42 PM	21-024-A00	FABRICATE ASSEMBLY	3.66	\$501.57	10/6/2023 12:16:24 AM
	10/5/2023 8:36:42 PM	21-024-A00	FABRICATE ASSEMBLY	(3.66)	(\$501.57)	10/6/2023 12:16:56 AM
	10/6/2023 5:54:26 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	2.10	\$287.43	10/6/2023 8:00:20 PM
	10/6/2023 8:31:42 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.79	\$518.81	10/7/2023 12:19:28 AM
	10/6/2023 8:34:42 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.74	\$511.96	10/7/2023 12:18:56 AM
	10/6/2023 8:34:42 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.74)	(\$511.96)	10/7/2023 12:19:28 AM
	10/9/2023 7:35:35 AM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	10.35	\$1,418.29	10/9/2023 5:56:45 PM
	10/10/2023 6:36:59 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	0.88	\$120.52	10/10/2023 7:29:47 AM
	10/10/2023 7:28:48 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	0.57	\$78.20	10/10/2023 8:03:04 AM
	10/10/2023 8:13:21 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	1.45	\$198.69	10/10/2023 9:40:45 AM
	10/10/2023 8:13:21 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	(1.45)	(\$198.69)	10/11/2023 2:42:43 PM
	10/10/2023 8:13:21 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	3.28	\$449.02	10/11/2023 2:42:42 PM

s.22(1)	10/10/2023 4:16:42 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.73	\$510.40	10/10/2023 8:00:16 PM
	10/10/2023 8:30:39 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.67	\$502.60	10/11/2023 12:11:22 AM
	10/10/2023 8:32:39 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.64	\$498.03	10/11/2023 12:10:48 AM
	10/10/2023 8:32:39 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.64)	(\$498.03)	10/11/2023 12:11:22 AM
	10/11/2023 4:20:51 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.68	\$504.01	10/11/2023 8:01:35 PM
	10/11/2023 8:31:36 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	2.83	\$387.06	10/12/2023 12:19:09 AM
	10/11/2023 8:35:36 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	2.76	\$377.93	10/11/2023 11:21:10 PM
	10/11/2023 8:35:36 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(2.76)	(\$377.93)	10/12/2023 12:19:10 AM
	10/13/2023 9:11:39 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	0.00	\$0.38	10/13/2023 9:11:50 AM
	10/16/2023 7:28:00 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	4.03	\$552.57	10/17/2023 6:51:36 AM
	10/16/2023 7:28:00 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	7.54	\$1,032.83	10/16/2023 3:00:21 PM
	10/16/2023 7:28:00 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	(7.54)	(\$1,032.83)	10/17/2023 6:51:36 AM
	10/16/2023 10:27:17 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	0.61	\$83.84	10/16/2023 1:16:02 PM
	10/16/2023 10:27:17 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	1.61	\$220.11	10/16/2023 12:03:43 PM
	10/16/2023 10:27:17 AM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	(1.61)	(\$220.11)	10/16/2023 1:16:02 PM
	10/16/2023 12:00:00 PM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	3.00	\$411.00	10/17/2023 6:51:36 AM
	10/23/2023 7:37:27 AM	03-044-H50	REPAIR REPL HOSE	7.34	\$1,005.85	10/23/2023 2:57:57 PM
	10/23/2023 2:58:15 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	\$0.53	10/23/2023 2:58:28 PM
	10/24/2023 9:05:06 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	5.49	\$752.74	10/24/2023 2:34:51 PM
	10/24/2023 2:34:46 PM	02-000	CLEAN UNIT SERVICES	0.37	\$50.65	10/24/2023 2:56:58 PM
	10/25/2023 7:30:38 AM	02-000	CLEAN UNIT SERVICES	2.47	\$338.05	10/25/2023 9:58:44 AM
	10/27/2023 12:00:00 PM	02-000	CLEAN UNIT SERVICES	2.96	\$405.63	10/27/2023 2:58:31 PM
	10/27/2023 2:57:27 PM	02-000	CLEAN UNIT SERVICES	0.00	\$0.46	10/27/2023 2:57:40 PM
	10/27/2023 2:57:27 PM	02-000	CLEAN UNIT SERVICES	0.00	(\$0.46)	10/27/2023 2:58:32 PM
	10/29/2023 8:00:00 AM	02-006-CRO	CLEAN ENGINE COVER	5.00	\$685.00	10/29/2023 5:31:14 PM
	10/30/2023 6:55:36 AM	21-010-B49	FABRICATE MISC BRACKETS	4.62	\$633.36	10/30/2023 11:32:59 AM
	10/30/2023 9:10:45 AM	02-006-CRO	CLEAN ENGINE COVER	1.30	\$177.95	10/30/2023 10:28:42 AM
	10/30/2023 12:06:03 PM	21-010-B49	FABRICATE MISC BRACKETS	2.90	\$397.41	10/30/2023 3:00:07 PM
	10/31/2023 6:30:00 AM	21-010-B49	FABRICATE MISC BRACKETS	1.40	\$192.03	11/1/2023 6:33:20 AM
	10/31/2023 6:33:29 AM	21-010-B49	FABRICATE MISC BRACKETS	(1.34)	(\$184.07)	11/1/2023 6:33:21 AM
	10/31/2023 6:33:29 AM	21-010-B49	FABRICATE MISC BRACKETS	1.34	\$184.07	10/31/2023 7:54:08 AM
	10/31/2023 7:51:08 AM	02-000	CLEAN UNIT SERVICES	2.18	\$299.15	10/31/2023 10:02:12 AM
	10/31/2023 12:04:16 PM	21-010-B49	FABRICATE MISC BRACKETS	(3.02)	(\$414.04)	11/1/2023 6:33:21 AM
	10/31/2023 12:04:16 PM	21-010-B49	FABRICATE MISC BRACKETS	2.93	\$401.26	11/1/2023 6:33:20 AM

s.22(1)

10/31/2023 12:04:16 PM	21-010-B49	FABRICATE MISC BRACKETS	3.02	\$414.04	10/31/2023 3:05:35 PM
11/1/2023 7:48:24 AM	02-000	CLEAN UNIT SERVICES	5.18	\$709.05	11/1/2023 12:58:58 PM
11/2/2023 6:32:00 AM	21-010-B49	FABRICATE MISC BRACKETS	4.97	\$680.89	11/2/2023 11:30:13 AM
11/2/2023 7:55:07 AM	02-000	CLEAN UNIT SERVICES	0.49	\$67.78	11/2/2023 8:24:49 AM
11/2/2023 12:04:25 PM	21-010-B49	FABRICATE MISC BRACKETS	2.06	\$282.14	11/2/2023 2:08:01 PM
11/3/2023 12:46:27 PM	25-031-A00	REMOVE ALTERNATOR	1.43	\$195.45	11/3/2023 2:12:04 PM
11/5/2023 2:59:05 PM	25-320	REMOVE UNDERCARRIAGE	1.02	\$139.09	11/5/2023 3:01:38 PM
11/5/2023 2:59:05 PM	25-320	REMOVE UNDERCARRIAGE	0.01	\$1.56	11/5/2023 2:59:48 PM
11/5/2023 2:59:05 PM	25-320	REMOVE UNDERCARRIAGE	(0.01)	(\$1.56)	11/5/2023 3:01:39 PM
11/6/2023 6:36:41 AM	21-010-B49	FABRICATE MISC BRACKETS	0.43	\$59.37	11/6/2023 7:02:42 AM
11/6/2023 6:43:44 AM	03-019-B10	REPAIR REPL BEARING	4.14	\$567.37	11/6/2023 10:52:23 AM
11/6/2023 6:43:44 AM	03-019-B10	REPAIR REPL BEARING	(4.14)	(\$567.37)	11/6/2023 10:56:31 AM
11/6/2023 6:43:44 AM	03-019-B10	REPAIR REPL BEARING	2.14	\$293.37	11/6/2023 10:56:31 AM
11/6/2023 6:43:44 AM	03-019-B10	REPAIR REPL BEARING	(2.14)	(\$293.37)	11/6/2023 11:00:35 AM
11/6/2023 7:43:44 AM	03-019-B10	REPAIR REPL BEARING	1.14	\$156.37	11/6/2023 11:00:34 AM
11/6/2023 11:59:09 AM	12-008-A00	REFINISH ASSEMBLY	2.93	\$400.73	11/6/2023 2:54:39 PM
11/6/2023 11:59:09 AM	12-008-A00	REFINISH ASSEMBLY	(2.93)	(\$400.73)	11/7/2023 6:09:57 AM
11/6/2023 11:59:09 AM	12-008-A00	REFINISH ASSEMBLY	3.01	\$412.94	11/7/2023 6:09:56 AM
11/7/2023 6:27:17 AM	12-008-A00	REFINISH ASSEMBLY	0.67	\$91.64	11/7/2023 7:07:28 AM
11/7/2023 6:27:17 AM	12-008-A00	REFINISH ASSEMBLY	(0.67)	(\$91.64)	11/7/2023 1:53:05 PM
11/7/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	0.62	\$85.43	11/7/2023 1:53:04 PM
11/7/2023 6:31:59 AM	21-010-B49	FABRICATE MISC BRACKETS	(2.83)	(\$388.36)	11/8/2023 6:13:41 AM
11/7/2023 6:31:59 AM	21-010-B49	FABRICATE MISC BRACKETS	2.83	\$388.36	11/7/2023 9:22:07 AM
11/7/2023 12:00:33 PM	12-008-A00	REFINISH ASSEMBLY	(2.24)	(\$306.99)	11/8/2023 6:05:49 AM
11/7/2023 12:00:33 PM	12-008-A00	REFINISH ASSEMBLY	2.92	\$399.51	11/7/2023 2:55:32 PM
11/7/2023 12:00:33 PM	12-008-A00	REFINISH ASSEMBLY	(2.92)	(\$399.51)	11/8/2023 6:05:34 AM
11/7/2023 12:00:33 PM	12-008-A00	REFINISH ASSEMBLY	2.99	\$409.74	11/8/2023 6:05:48 AM
11/7/2023 12:00:33 PM	12-008-A00	REFINISH ASSEMBLY	2.24	\$306.99	11/8/2023 6:05:34 AM
11/7/2023 12:48:33 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	2.33	\$318.60	11/7/2023 3:08:05 PM
11/7/2023 12:48:33 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	(2.33)	(\$318.60)	11/8/2023 6:14:10 AM
11/7/2023 12:48:33 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	2.19	\$300.14	11/8/2023 6:14:09 AM
11/8/2023 6:23:44 AM	12-008-A00	REFINISH ASSEMBLY	(2.63)	(\$360.80)	11/8/2023 2:41:53 PM
11/8/2023 6:23:44 AM	12-008-A00	REFINISH ASSEMBLY	2.63	\$360.80	11/8/2023 9:01:46 AM
11/8/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	2.53	\$346.50	11/8/2023 2:41:52 PM



s.22(1)	11/8/2023 6:32:55 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.93	\$127.60	11/8/2023 7:28:49 AM
	11/8/2023 10:14:05 AM	12-008-A00	REFINISH ASSEMBLY	1.19	\$162.57	11/8/2023 11:25:18 AM
	11/8/2023 10:14:05 AM	12-008-A00	REFINISH ASSEMBLY	(1.19)	(\$162.57)	11/8/2023 2:41:53 PM
	11/8/2023 10:14:05 AM	12-008-A00	REFINISH ASSEMBLY	1.27	\$173.34	11/8/2023 2:41:52 PM
	11/8/2023 10:24:49 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	1.88	\$257.52	11/8/2023 12:17:46 PM
	11/8/2023 10:24:49 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	(1.88)	(\$257.52)	11/8/2023 2:56:43 PM
	11/8/2023 10:24:49 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	1.10	\$150.21	11/8/2023 2:56:43 PM
	11/8/2023 11:58:12 AM	12-008-A00	REFINISH ASSEMBLY	1.17	\$160.18	11/8/2023 1:08:23 PM
	11/8/2023 11:58:12 AM	12-008-A00	REFINISH ASSEMBLY	(1.17)	(\$160.18)	11/8/2023 2:41:53 PM
	11/8/2023 12:00:00 PM	12-008-A00	REFINISH ASSEMBLY	1.14	\$156.07	11/8/2023 2:41:52 PM
	11/8/2023 12:00:36 PM	PP-045-000	PREORD PARTS MAIN ENGINE SYSTEM	2.99	\$409.55	11/8/2023 2:57:03 PM
	11/8/2023 12:00:36 PM	PP-045-000	PREORD PARTS MAIN ENGINE SYSTEM	2.92	\$400.42	11/8/2023 2:56:53 PM
	11/8/2023 12:00:36 PM	PP-045-000	PREORD PARTS MAIN ENGINE SYSTEM	(2.92)	(\$400.42)	11/8/2023 2:57:03 PM
	11/8/2023 12:17:36 PM	PP-045-000	PREORD PARTS MAIN ENGINE SYSTEM	2.64	\$361.60	11/8/2023 2:56:00 PM
	11/8/2023 12:17:36 PM	PP-045-000	PREORD PARTS MAIN ENGINE SYSTEM	(2.64)	(\$361.60)	11/8/2023 2:56:53 PM
	11/9/2023 6:25:15 AM	12-008-A00	REFINISH ASSEMBLY	2.54	\$348.59	11/9/2023 8:57:56 AM
	11/9/2023 6:25:15 AM	12-008-A00	REFINISH ASSEMBLY	(2.54)	(\$348.59)	11/9/2023 2:33:38 PM
	11/9/2023 6:30:00 AM	12-008-000	REFINISH SYSTEM	2.47	\$388.50	11/9/2023 2:34:03 PM
	11/9/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	2.47	\$337.74	11/9/2023 2:33:38 PM
	11/9/2023 6:35:01 AM	12-008-000	REFINISH SYSTEM	2.38	\$375.33	11/9/2023 8:58:01 AM
	11/9/2023 6:35:01 AM	12-008-000	REFINISH SYSTEM	(2.38)	(\$375.33)	11/9/2023 2:34:03 PM
	11/9/2023 6:45:11 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.10	\$287.66	11/9/2023 2:52:52 PM
	11/9/2023 6:45:11 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	8.10	\$1,109.66	11/9/2023 2:51:12 PM
	11/9/2023 6:45:11 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(8.10)	(\$1,109.66)	11/9/2023 2:52:52 PM
	11/9/2023 6:58:33 AM	12-043-PB0	REFINISH PIPE	0.49	\$66.83	11/9/2023 7:27:54 AM
	11/9/2023 8:51:10 AM	01-033-000	CAL ADJUST IGNITION SYSTEM	2.67	\$365.90	11/9/2023 2:52:52 PM
	11/9/2023 12:00:35 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	2.95	\$404.57	11/9/2023 2:52:52 PM
	11/9/2023 12:01:13 PM	12-008-A00	REFINISH ASSEMBLY	(2.88)	(\$395.17)	11/10/2023 12:30:21 PM
	11/9/2023 12:01:13 PM	12-008-A00	REFINISH ASSEMBLY	2.98	\$408.22	11/10/2023 12:30:20 PM
	11/9/2023 12:01:13 PM	12-008-A00	REFINISH ASSEMBLY	2.88	\$395.17	11/9/2023 2:54:17 PM
	11/9/2023 12:01:20 PM	12-008-000	REFINISH SYSTEM	2.92	\$459.55	11/9/2023 2:56:24 PM
	11/9/2023 12:01:20 PM	12-008-000	REFINISH SYSTEM	(2.92)	(\$459.55)	11/10/2023 12:30:56 PM
	11/9/2023 12:01:20 PM	12-008-000	REFINISH SYSTEM	2.98	\$469.00	11/10/2023 12:30:56 PM
	11/9/2023 2:51:10 PM	01-033-000	CAL ADJUST IGNITION SYSTEM	0.00	\$0.57	11/9/2023 2:51:27 PM

s.22(1)	11/9/2023 2:51:10 PM	01-033-000	CAL ADJUST IGNITION SYSTEM	0.00	(\$0.57)	11/9/2023 2:52:52 PM
	11/9/2023 2:51:35 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	0.00	\$0.42	11/9/2023 2:51:47 PM
	11/9/2023 2:51:35 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	0.00	(\$0.42)	11/9/2023 2:52:52 PM
	11/10/2023 6:24:37 AM	12-008-000	REFINISH SYSTEM	5.00	\$787.63	11/10/2023 11:24:40 AM
	11/14/2023 7:08:52 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	6.78	\$928.86	11/14/2023 1:55:41 PM
	11/14/2023 7:08:52 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	(6.78)	(\$928.86)	11/14/2023 2:01:52 PM
	11/15/2023 6:40:00 AM	02-000-000	CLEAN COMPLETE UNIT	4.17	\$571.63	11/15/2023 10:50:23 AM
	11/15/2023 7:04:58 AM	02-000-000	CLEAN COMPLETE UNIT	1.88	\$257.56	11/15/2023 3:02:05 PM
	11/15/2023 7:04:58 AM	02-000-000	CLEAN COMPLETE UNIT	(1.88)	(\$257.56)	11/15/2023 3:03:26 PM
	11/15/2023 7:04:58 AM	02-000-000	CLEAN COMPLETE UNIT	2.88	\$394.56	11/15/2023 3:03:26 PM
	11/15/2023 7:04:58 AM	02-000-000	CLEAN COMPLETE UNIT	7.88	\$1,079.56	11/15/2023 2:57:48 PM
	11/15/2023 7:04:58 AM	02-000-000	CLEAN COMPLETE UNIT	(7.88)	(\$1,079.56)	11/15/2023 3:02:05 PM
	11/15/2023 8:57:46 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	1.01	\$138.94	11/15/2023 3:02:39 PM
	11/15/2023 8:57:46 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	(1.01)	(\$138.94)	11/15/2023 3:03:26 PM
	11/15/2023 9:57:46 AM	03-045-G12	REPAIR REPL GASKETS/SEALS	1.50	\$205.50	11/15/2023 3:03:26 PM
	11/15/2023 12:00:09 PM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	2.98	\$408.37	11/15/2023 3:01:43 PM
	11/15/2023 2:58:09 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	0.01	\$1.07	11/15/2023 2:58:51 PM
	11/15/2023 2:58:09 PM	03-045-G12	REPAIR REPL GASKETS/SEALS	(0.01)	(\$1.07)	11/15/2023 3:02:39 PM
	11/15/2023 2:58:37 PM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	0.01	\$0.88	11/15/2023 2:59:02 PM
	11/15/2023 2:58:37 PM	25-027-000	REMOVE AUTOMATIC TRANS SYSTEM	(0.01)	(\$0.88)	11/15/2023 3:01:43 PM
	11/16/2023 8:44:56 AM	03-044-PS0	REPAIR REPL PUMP	2.76	\$377.97	11/16/2023 2:49:02 PM
	11/16/2023 8:44:56 AM	03-044-PS0	REPAIR REPL PUMP	3.33	\$455.60	11/16/2023 12:04:30 PM
	11/16/2023 8:44:56 AM	03-044-PS0	REPAIR REPL PUMP	(3.33)	(\$455.60)	11/16/2023 2:49:03 PM
	11/16/2023 12:00:00 PM	14-025-C50	INSTALL CHAIN DRIVE	2.78	\$380.21	11/16/2023 2:46:46 PM
	11/16/2023 12:00:38 PM	03-003-S64	REPAIR REPL OIL PR SENDER	2.13	\$292.23	11/16/2023 2:49:02 PM
	11/16/2023 12:04:38 PM	03-003-S64	REPAIR REPL OIL PR SENDER	2.07	\$283.10	11/16/2023 2:48:32 PM
	11/16/2023 12:04:38 PM	03-003-S64	REPAIR REPL OIL PR SENDER	(2.07)	(\$283.10)	11/16/2023 2:49:03 PM
	11/16/2023 12:04:38 PM	03-003-S64	REPAIR REPL OIL PR SENDER	2.40	\$328.76	11/16/2023 2:28:46 PM
	11/16/2023 12:04:38 PM	03-003-S64	REPAIR REPL OIL PR SENDER	(2.40)	(\$328.76)	11/16/2023 2:48:32 PM
	11/16/2023 12:22:43 PM	14-025-C50	INSTALL CHAIN DRIVE	2.64	\$361.41	11/16/2023 3:01:01 PM
	11/16/2023 2:43:22 PM	14-025-C50	INSTALL CHAIN DRIVE	0.05	\$7.19	11/16/2023 2:46:32 PM
	11/16/2023 2:43:22 PM	14-025-C50	INSTALL CHAIN DRIVE	(0.05)	(\$7.19)	11/16/2023 2:46:46 PM
	11/17/2023 6:59:22 AM	03-044-PS0	REPAIR REPL PUMP	2.29	\$314.38	11/17/2023 9:17:04 AM
	11/17/2023 9:17:03 AM	03-042-PS0	REPAIR REPL WATER PUMP	5.71	\$781.62	11/17/2023 2:59:24 PM

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11/17/2023 11:14:37 AM	21-010-B49	FABRICATE MISC BRACKETS	0.30	\$41.71	11/17/2023 11:32:53 AM
11/17/2023 12:03:42 PM	21-010-B49	FABRICATE MISC BRACKETS	2.98	\$407.99	11/17/2023 3:02:23 PM
11/18/2023 6:00:24 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	2.51	\$343.64	11/18/2023 3:34:40 PM
11/18/2023 6:20:24 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	9.18	\$1,256.98	11/18/2023 3:30:55 PM
11/18/2023 6:20:24 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(9.18)	(\$1,256.98)	11/18/2023 3:34:41 PM
11/18/2023 8:30:54 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	5.01	\$685.76	11/18/2023 3:34:40 PM
11/18/2023 1:31:14 PM	03-044-H50	REPAIR REPL HOSE	2.47	\$338.81	11/18/2023 3:34:41 PM
11/18/2023 3:30:54 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.01	\$0.76	11/18/2023 3:31:23 PM
11/18/2023 3:30:54 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(0.01)	(\$0.76)	11/18/2023 3:34:41 PM
11/18/2023 3:31:14 PM	03-044-H50	REPAIR REPL HOSE	0.02	\$3.16	11/18/2023 3:32:39 PM
11/18/2023 3:31:14 PM	03-044-H50	REPAIR REPL HOSE	(0.02)	(\$3.16)	11/18/2023 3:34:41 PM
11/19/2023 6:00:18 AM	03-044-H50	REPAIR REPL HOSE	3.98	\$545.03	11/20/2023 6:43:43 AM
11/19/2023 6:00:18 AM	03-044-H50	REPAIR REPL HOSE	(3.98)	(\$545.03)	11/20/2023 6:44:31 AM
11/19/2023 6:00:18 AM	03-044-H50	REPAIR REPL HOSE	3.00	\$410.32	11/20/2023 6:44:30 AM
11/19/2023 6:00:18 AM	03-044-H50	REPAIR REPL HOSE	9.99	\$1,368.33	11/19/2023 3:47:03 PM
11/19/2023 6:00:18 AM	03-044-H50	REPAIR REPL HOSE	(9.99)	(\$1,368.33)	11/20/2023 6:43:43 AM
11/19/2023 6:44:18 AM	03-044-H50	REPAIR REPL HOSE	9.04	\$1,238.18	11/19/2023 3:46:36 PM
11/19/2023 6:44:18 AM	03-044-H50	REPAIR REPL HOSE	(9.04)	(\$1,238.18)	11/19/2023 3:47:03 PM
11/19/2023 1:00:00 PM	03-027-LV0	REPAIR REPL LINKAGE	3.00	\$411.00	11/20/2023 6:43:20 AM
11/20/2023 6:52:35 AM	03-044-H50	REPAIR REPL HOSE	1.35	\$185.29	11/20/2023 8:14:29 AM
11/20/2023 8:12:35 AM	03-044-H50	REPAIR REPL HOSE	0.02	\$2.63	11/20/2023 8:13:54 AM
11/20/2023 8:12:35 AM	03-044-H50	REPAIR REPL HOSE	(0.02)	(\$2.63)	11/20/2023 8:14:29 AM
11/20/2023 8:13:44 AM	03-027-CN0	REPAIR REPL COOLER	2.31	\$316.89	11/20/2023 10:32:45 AM
11/20/2023 10:32:31 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	3.81	\$522.05	11/20/2023 2:21:11 PM
11/20/2023 10:32:31 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(3.81)	(\$522.05)	11/20/2023 2:22:49 PM
11/20/2023 10:32:31 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	0.94	\$129.31	11/20/2023 2:22:48 PM
11/20/2023 11:59:00 AM	03-042-R60	REPAIR REPL RADIATOR	2.52	\$344.78	11/21/2023 8:12:16 AM
11/20/2023 12:00:36 PM	03-042-R60	REPAIR REPL RADIATOR	2.49	\$341.13	11/21/2023 8:11:35 AM
11/20/2023 12:00:36 PM	03-042-R60	REPAIR REPL RADIATOR	(2.49)	(\$341.13)	11/21/2023 8:12:16 AM
11/20/2023 12:00:36 PM	03-042-R60	REPAIR REPL RADIATOR	2.49	\$340.83	11/20/2023 2:22:49 PM
11/20/2023 12:00:36 PM	03-042-R60	REPAIR REPL RADIATOR	(2.49)	(\$340.83)	11/21/2023 8:11:35 AM
11/20/2023 2:21:36 PM	03-042-R60	REPAIR REPL RADIATOR	0.00	\$0.61	11/20/2023 2:21:55 PM
11/20/2023 2:21:36 PM	03-042-R60	REPAIR REPL RADIATOR	0.00	(\$0.61)	11/20/2023 2:22:49 PM
11/21/2023 7:04:08 AM	03-031-A00	REPAIR REPL ALTERNATOR	1.60	\$218.52	11/21/2023 8:39:52 AM

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11/21/2023 7:30:15 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	7.24	\$991.65	11/21/2023 2:44:34 PM
11/21/2023 7:30:15 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(7.24)	(\$991.65)	11/22/2023 1:12:24 PM
11/21/2023 7:30:15 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	4.00	\$547.43	11/22/2023 1:12:23 PM
11/21/2023 8:39:50 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	2.83	\$388.32	11/21/2023 2:57:28 PM
11/21/2023 8:39:50 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	6.27	\$858.69	11/21/2023 2:55:56 PM
11/21/2023 8:39:50 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(6.27)	(\$858.69)	11/21/2023 2:57:29 PM
11/21/2023 12:00:00 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	2.73	\$374.47	11/22/2023 1:12:24 PM
11/21/2023 12:00:06 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	2.99	\$409.14	11/21/2023 2:57:28 PM
11/21/2023 2:56:06 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	0.00	\$0.42	11/21/2023 2:56:19 PM
11/21/2023 2:56:06 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	0.00	(\$0.42)	11/21/2023 2:57:29 PM
11/22/2023 6:42:37 AM	03-042-LS0	REPAIR REPL COOLANT LINE	4.77	\$653.98	11/22/2023 1:07:41 PM
11/22/2023 6:42:37 AM	03-042-LS0	REPAIR REPL COOLANT LINE	6.37	\$873.18	11/22/2023 1:05:04 PM
11/22/2023 6:42:37 AM	03-042-LS0	REPAIR REPL COOLANT LINE	(6.37)	(\$873.18)	11/22/2023 1:07:42 PM
11/22/2023 7:07:00 AM	21-010-B49	FABRICATE MISC BRACKETS	4.38	\$600.40	11/22/2023 11:29:58 AM
11/22/2023 7:35:52 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	4.34	\$594.85	11/22/2023 11:56:24 AM
11/22/2023 7:35:52 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(4.34)	(\$594.85)	11/23/2023 8:18:59 AM
11/22/2023 7:35:52 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	3.84	\$525.47	11/23/2023 8:18:58 AM
11/22/2023 12:05:09 PM	21-010-B49	FABRICATE MISC BRACKETS	2.95	\$404.61	11/22/2023 3:02:21 PM
11/22/2023 1:05:18 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	1.86	\$255.12	11/22/2023 2:57:03 PM
11/22/2023 1:05:18 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(1.86)	(\$255.12)	11/23/2023 8:19:17 AM
11/22/2023 1:05:18 PM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	1.91	\$261.90	11/23/2023 8:19:16 AM
11/22/2023 1:06:52 PM	03-044-T60	REPAIR REPL TANK	1.74	\$238.99	11/22/2023 2:51:34 PM
11/22/2023 1:06:52 PM	03-044-T60	REPAIR REPL TANK	(1.74)	(\$238.99)	11/22/2023 2:52:41 PM
11/22/2023 1:06:52 PM	03-044-T60	REPAIR REPL TANK	1.88	\$257.26	11/22/2023 2:52:40 PM
11/23/2023 6:35:11 AM	21-010-B49	FABRICATE MISC BRACKETS	4.92	\$673.47	11/23/2023 11:30:08 AM
11/23/2023 6:48:13 AM	03-042-LS0	REPAIR REPL COOLANT LINE	5.29	\$724.16	11/23/2023 12:05:24 PM
11/23/2023 6:48:13 AM	03-042-LS0	REPAIR REPL COOLANT LINE	(5.29)	(\$724.16)	11/23/2023 2:58:54 PM
11/23/2023 6:48:13 AM	03-042-LS0	REPAIR REPL COOLANT LINE	4.69	\$641.96	11/23/2023 2:58:53 PM
11/23/2023 7:02:20 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.72	\$98.60	11/23/2023 7:45:33 AM
11/23/2023 7:43:37 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	7.22	\$989.18	11/23/2023 2:56:51 PM
11/23/2023 7:45:31 AM	12-028	REFINISH POWERTRAIN	3.54	\$484.68	11/23/2023 11:17:49 AM
11/23/2023 12:00:20 PM	03-042-LS0	REPAIR REPL COOLANT LINE	2.99	\$409.82	11/23/2023 2:58:54 PM
11/23/2023 12:00:46 PM	21-010-B49	FABRICATE MISC BRACKETS	2.96	\$405.94	11/23/2023 2:58:33 PM
11/23/2023 12:07:20 PM	03-042-LS0	REPAIR REPL COOLANT LINE	2.82	\$386.99	11/23/2023 2:57:11 PM

s.22(1)	11/23/2023 12:07:20 PM	03-042-LS0	REPAIR REPL COOLANT LINE	(2.82)	(\$386.99)	11/23/2023 2:58:54 PM
	11/24/2023 7:09:11 AM	21-010-B49	FABRICATE MISC BRACKETS	4.36	\$597.43	11/24/2023 11:30:52 AM
	11/24/2023 7:10:09 AM	03-044-H50	REPAIR REPL HOSE	1.11	\$152.30	11/24/2023 8:16:58 AM
	11/24/2023 12:05:20 PM	21-010-B49	FABRICATE MISC BRACKETS	3.05	\$417.77	11/24/2023 3:08:18 PM
	11/27/2023 6:30:00 AM	21-010-B49	FABRICATE MISC BRACKETS	5.05	\$691.66	11/28/2023 6:38:46 AM
	11/27/2023 6:32:40 AM	21-010-B49	FABRICATE MISC BRACKETS	5.00	\$685.57	11/27/2023 11:32:55 AM
	11/27/2023 6:32:40 AM	21-010-B49	FABRICATE MISC BRACKETS	(5.00)	(\$685.57)	11/28/2023 6:38:47 AM
	11/27/2023 12:05:32 PM	21-010-B49	FABRICATE MISC BRACKETS	2.90	\$396.88	11/27/2023 2:59:21 PM
	11/27/2023 5:07:42 PM	21-024-A00	FABRICATE ASSEMBLY	2.91	\$399.01	11/27/2023 8:02:29 PM
	11/27/2023 8:32:28 PM	21-024-A00	FABRICATE ASSEMBLY	3.64	\$498.45	11/28/2023 12:28:20 AM
	11/27/2023 8:34:28 PM	21-024-A00	FABRICATE ASSEMBLY	3.61	\$493.89	11/28/2023 12:10:49 AM
	11/27/2023 8:34:28 PM	21-024-A00	FABRICATE ASSEMBLY	(3.61)	(\$493.89)	11/28/2023 12:28:21 AM
	11/28/2023 6:30:27 AM	21-010-B49	FABRICATE MISC BRACKETS	5.06	\$693.60	11/28/2023 11:34:13 AM
	11/28/2023 12:04:58 PM	21-010-B49	FABRICATE MISC BRACKETS	2.98	\$408.07	11/28/2023 3:03:41 PM
	11/28/2023 4:01:30 PM	21-024-A00	FABRICATE ASSEMBLY	3.99	\$547.16	11/28/2023 8:01:10 PM
	11/29/2023 6:33:46 AM	21-010-B49	FABRICATE MISC BRACKETS	4.91	\$672.82	11/29/2023 11:28:26 AM
	11/30/2023 6:33:25 AM	21-010-B49	FABRICATE MISC BRACKETS	4.94	\$676.89	11/30/2023 11:29:52 AM
	11/30/2023 8:27:23 AM	03-043-PB0	REPAIR REPL PIPE	3.60	\$492.63	11/30/2023 12:03:09 PM
	11/30/2023 12:02:45 PM	21-010-B49	FABRICATE MISC BRACKETS	2.96	\$404.87	11/30/2023 3:00:04 PM
	11/30/2023 12:30:35 PM	21-010-B49	FABRICATE MISC BRACKETS	1.16	\$158.50	12/1/2023 10:59:19 AM
	11/30/2023 12:30:35 PM	21-010-B49	FABRICATE MISC BRACKETS	2.41	\$330.78	11/30/2023 2:55:28 PM
	11/30/2023 12:30:35 PM	21-010-B49	FABRICATE MISC BRACKETS	(2.41)	(\$330.78)	12/1/2023 10:59:20 AM
	12/2/2023 6:31:53 AM	21-010-B49	FABRICATE MISC BRACKETS	0.17	\$22.64	12/2/2023 6:41:49 AM
	12/2/2023 11:40:46 AM	21-010-B49	FABRICATE MISC BRACKETS	3.93	\$538.07	12/2/2023 3:36:26 PM
	12/2/2023 12:45:11 PM	03-042-LS0	REPAIR REPL COOLANT LINE	4.25	\$581.76	12/2/2023 4:54:26 PM
	12/2/2023 12:45:11 PM	03-042-LS0	REPAIR REPL COOLANT LINE	4.15	\$568.06	12/2/2023 4:53:59 PM
	12/2/2023 12:45:11 PM	03-042-LS0	REPAIR REPL COOLANT LINE	(4.15)	(\$568.06)	12/2/2023 4:54:27 PM
	12/2/2023 4:17:26 PM	03-042-LS0	REPAIR REPL COOLANT LINE	0.20	\$27.36	12/2/2023 4:29:26 PM
	12/2/2023 4:17:26 PM	03-042-LS0	REPAIR REPL COOLANT LINE	(0.20)	(\$27.36)	12/2/2023 4:29:39 PM
	12/2/2023 4:17:26 PM	03-042-LS0	REPAIR REPL COOLANT LINE	0.71	\$97.19	12/2/2023 4:29:39 PM
	12/4/2023 6:31:26 AM	21-010-B49	FABRICATE MISC BRACKETS	5.00	\$685.65	12/4/2023 11:31:40 AM
	12/4/2023 12:00:00 PM	21-010-B49	FABRICATE MISC BRACKETS	3.00	\$411.00	12/5/2023 8:46:27 AM
	12/4/2023 12:07:39 PM	21-010-B49	FABRICATE MISC BRACKETS	2.85	\$390.15	12/4/2023 2:58:31 PM
	12/4/2023 12:07:39 PM	21-010-B49	FABRICATE MISC BRACKETS	(2.85)	(\$390.15)	12/5/2023 8:46:28 AM

s.22(1)	12/5/2023 6:30:00 AM	21-010-B49	FABRICATE MISC BRACKETS	8.00	\$1,096.00	12/6/2023 7:31:37 AM
	12/5/2023 6:37:07 AM	21-010-B49	FABRICATE MISC BRACKETS	8.41	\$1,152.32	12/5/2023 3:01:47 PM
	12/5/2023 6:37:07 AM	21-010-B49	FABRICATE MISC BRACKETS	(8.41)	(\$1,152.32)	12/6/2023 7:31:38 AM
	12/5/2023 6:45:44 AM	03-044-A00	REPAIR REPL CARBURETOR	4.75	\$650.94	12/5/2023 2:56:24 PM
	12/5/2023 7:15:44 AM	03-044-A00	REPAIR REPL CARBURETOR	7.63	\$1,045.96	12/5/2023 2:53:51 PM
	12/5/2023 7:15:44 AM	03-044-A00	REPAIR REPL CARBURETOR	(7.63)	(\$1,045.96)	12/5/2023 2:56:24 PM
	12/5/2023 12:00:27 PM	35-044-A00	DIAGNOSE CARBURETOR	2.97	\$406.81	12/5/2023 2:56:24 PM
	12/5/2023 2:54:27 PM	35-044-A00	DIAGNOSE CARBURETOR	0.00	\$0.38	12/5/2023 2:54:38 PM
	12/5/2023 2:54:27 PM	35-044-A00	DIAGNOSE CARBURETOR	0.00	(\$0.38)	12/5/2023 2:56:24 PM
	12/6/2023 6:32:42 AM	21-010-B49	FABRICATE MISC BRACKETS	4.98	\$682.87	12/6/2023 11:31:45 AM
TOTAL			423.30	\$58,206.46		

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	4TF005	FLUID, ASPEN FUEL 4 CYCLE	2.00	\$93.12	10/27/2023 1:49:03 PM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	3.00	\$5.11	11/1/2023 9:22:25 AM
MANYAR	70031020	BRUSH, PAINT BRISTLE 2"	3.00	\$5.22	11/1/2023 9:22:25 AM
MANYAR	70031030	BRUSH, PAINT BRISTLE 3"	3.00	\$7.01	11/1/2023 9:22:26 AM
MANYAR	L-400-4	BRUSH, PAINT 4"	3.00	\$10.16	11/1/2023 9:22:26 AM
MANYAR	75SCP100	CARTRIDGE, RESPIRATOR COMBO	1.00	\$36.34	11/1/2023 9:22:26 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$11.28	11/7/2023 11:37:18 AM
MANYAR	13C058	WHEEL, WIRE STRAIGHT BRUSHES	1.00	\$31.57	10/31/2023 7:19:07 AM
MANYAR	69508	INHIBITOR, RUST PINT(RUSTMORE)	2.00	\$111.90	10/31/2023 6:34:46 PM
MANYAR	51810-1310-111	ROPE, POLY 1/4"	20.00	\$1.13	9/6/2023 11:07:26 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$26.54	11/29/2023 1:24:04 PM
MANYAR	52423	TAPE, SAFETY WALK BLACK 2"x60'	2.00	\$3.50	10/25/2023 3:35:21 PM
MANYAR	X115-C	ELOW, STREET 3/8 FPT X 3/8 NPT	2.00	\$14.99	9/27/2023 11:04:31 AM
MANYAR	76-3350BPK	RECEPTACLE, 10PK 4WAY DTP	1.00	\$256.31	9/26/2023 4:18:01 PM
MANYAR	76-3351BPK	PLUG, 10PK 4WAY DTP HOUSING	1.00	\$215.15	9/26/2023 4:18:01 PM
MANYAR	553.1496	TERMINAL, FEM DISCON 16-14GA	50.00	\$27.66	10/6/2023 9:17:52 AM
MANYAR	31072	BREATHER, TWIST-ON - PCV	1.00	\$10.45	11/14/2023 11:11:22 AM
MANYAR	31072	BREATHER, TWIST-ON - PCV	1.00	\$10.45	11/10/2023 12:42:54 PM
MANYAR	FV289	VALVE, PCV	2.00	\$10.85	11/10/2023 12:42:54 PM
MANYAR	84-4000	TUBING, SHRINK DUAL WALL 1/4	6.00	\$11.04	9/25/2023 2:41:57 PM

MANYAR	84-4001	TUBING, SHRINK DUAL WALL 3/8	6.00	\$10.02	9/25/2023 2:41:57 PM
MANYAR	84-4005	TUBING, SHRINK DUAL WALL 3/16	6.00	\$8.26	9/25/2023 2:41:58 PM
MANYAR	2063	BREATHER, CHROME TWIST ON	2.00	\$39.57	11/9/2023 3:48:52 PM
MANYAR	4484	GAUGE, VACUUM 2-5/8"	1.00	\$182.38	10/3/2023 12:48:22 PM
MANYAR	4457	GAUGE, TRANS TEMP 2-5/8	1.00	\$171.16	10/3/2023 12:48:22 PM
MANYAR	3203	MOUNTING CUP, GAUAGE	2.00	\$138.52	10/3/2023 12:48:23 PM
MANYAR	SFF6N0.75BK-100	LOOM, SMARTFLEX 3/4"	1.00	\$257.95	10/3/2023 3:16:01 PM
MANYAR	76-3322PK	TERMINAL, SCKT 12-10G 10PK	1.00	\$29.72	9/26/2023 4:18:02 PM
MANYAR	76-3323PK	TERMINAL, PIN 12-10G 10PK	1.00	\$24.95	9/26/2023 4:18:02 PM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$72.83	11/22/2023 8:22:13 AM
MANYAR	1337	GAUGE, WATER TEMPERATURE	1.00	\$115.66	11/22/2023 8:22:16 AM
MANYAR	1391	GAUGE, VOLTAGEMETER	1.00	\$94.18	11/22/2023 8:22:20 AM
MANYAR	1327	GAUGE, OIL PRESSURE	1.00	\$158.35	11/22/2023 8:22:23 AM
MANYAR	19307	GAUGE, TACHOMETER	1.00	\$507.73	11/22/2023 8:22:27 AM
MANYAR	200765-35	GAUGE, OIL TEMPERATURE	1.00	\$163.16	11/22/2023 8:22:30 AM
MANYAR	4603	GAUGE, BOOST/VACUUM	1.00	\$206.00	11/22/2023 8:22:34 AM
MANYAR	3201	MOUNTING CUP, GAUAGE	2.00	\$167.68	11/22/2023 8:22:38 AM
MANYAR	68366P	GAUGE, HOUR METER	1.00	\$179.75	11/22/2023 8:36:24 AM
MANYAR	76-2406PK	CONNECTOR, BUTT 12-10 GA	1.00	\$46.35	10/6/2023 10:43:23 AM
MANYAR	76-2408PK	SLIDES, 14GA 90 PK/100	1.00	\$66.75	10/6/2023 10:43:23 AM
MANYAR	76-2409PK	CONNECTOR, SLIDE FEMALE 12-10	1.00	\$98.46	10/6/2023 10:43:24 AM
MANYAR	76-2423PK	CONNECTOR, SLIDE NON-INSULATED	1.00	\$54.96	10/6/2023 10:43:24 AM
MANYAR	76-2429PK	CONNECTOR, BUTT NON-INSULATED	1.00	\$29.36	10/6/2023 10:43:24 AM
MANYAR	732401	WIRE, 16GA BROWN	1.00	\$55.73	9/29/2023 2:34:13 PM
MANYAR	BROKERAGE FEES	BROKERAGE FEES	1.00	\$181.18	11/22/2023 8:28:05 AM
MANYAR	0460-215-16141	PIN, SIZE 16 14 AWG	125.00	\$127.71	11/22/2023 8:30:58 AM
MANYAR	JJM1-12V	RELAY, PANASONIC	4.00	\$25.69	11/22/2023 8:31:01 AM
MANYAR	X124-B	ELOW, STREET45 1/4FPT X 1/4NPT	1.00	\$5.46	12/5/2023 9:59:35 AM
MANYAR	121-C	PLUG, HEX HEAD 3/8" NPT	2.00	\$3.82	11/23/2023 1:59:37 PM
MANYAR	121-A	PLUG, HEX HEAD 1/8" NPT	2.00	\$1.97	11/23/2023 1:59:40 PM
MANYAR	H176	HOSE, FUEL 5/16"	10.00	\$35.45	11/23/2023 1:59:44 PM
MANYAR	121-B	PLUG, HEX HEAD 1/4" NPT	2.00	\$2.89	11/23/2023 1:59:47 PM
MANYAR	6237937	WEATHERSTRIP, 5/16 X 3/4	10.00	\$5.25	11/23/2023 12:48:28 PM
MANYAR	6237694	WEATHERSTRIP, 3/4 X 1/8	10.00	\$2.07	11/23/2023 12:48:31 PM

MANYAR	ACD22760L	HOSE, MOLDED	1.00	\$47.71	11/24/2023 2:04:27 PM
MANYAR	51810-1310-111	ROPE, POLY 1/4"	10.00	\$0.61	11/23/2023 8:53:42 AM
MANYAR	4TF005	FLUID, ASPEN FUEL 4 CYCLE	2.00	\$95.53	12/2/2023 3:07:57 PM
MANYAR	82-2115	SWITCH, TOGGLE ILLUMINATED	10.00	\$227.02	11/29/2023 1:23:29 PM
MANYAR	RC-9920	FILTER	1.00	\$113.56	11/22/2023 8:10:31 AM
MANYAR	RC-9920	FILTER	1.00	\$113.56	11/22/2023 8:11:10 AM
MANYAR	1MNJ7	BUSHING, REDUCER 1/2 X 3/8	1.00	\$5.07	11/22/2023 10:15:26 AM
MANYAR	01A016	DRILL BIT, 1/4 SST JOBBER	1.00	\$6.31	11/24/2023 10:11:49 AM
MANYAR	120-DC	ADAPTER, 1/2" FPT X 3/8" NPT	2.00	\$11.78	11/17/2023 11:09:09 AM
MANYAR	103-D	COUPLING, BRASS 1/2" FPT	1.00	\$6.22	11/17/2023 11:09:09 AM
MANYAR	103-C	COUPLING, BRASS 3/8" FPT	1.00	\$4.54	11/17/2023 11:09:10 AM
MANYAR	69-4A	ELBOW, 90 1/4TUBE OD X 1/8 MPT	2.00	\$9.29	11/17/2023 3:09:33 PM
MANYAR	68-4A	CONNECTOR, 1/4TUBE OD X1/8 MPT	2.00	\$3.01	11/17/2023 3:09:33 PM
MANYAR	110-BA	BUSHING, 1/4"NPT X 1/8 "FPT	1.00	\$1.30	11/17/2023 3:09:34 PM
MANYAR	07447	PAD, RED SCOTCH BRITE	2.00	\$3.74	11/17/2023 10:01:54 AM
MANYAR	35600	HANGER, EXHAUST TAIL PIPE	2.00	\$16.55	10/30/2023 12:59:09 PM
MANYAR	35398	HANGER, EXHAUST TAIL PIPE	2.00	\$14.46	10/30/2023 1:01:03 PM
MANYAR	13C058	WHEEL, WIRE STRAIGHT BRUSHES	1.00	\$31.57	10/30/2023 1:09:49 PM
MANYAR	53347	FLAPWHEEL, 1" X 1" 60G	1.00	\$5.52	10/30/2023 1:09:50 PM
MANYAR	HS20	CLAMP, HOSE 3/4" - 1-3/4"	2.00	\$2.69	11/30/2023 11:22:38 AM
MANYAR	1012B	PAINT, STEEL BLACK	1.00	\$56.98	11/30/2023 11:12:13 AM
MANYAR	41920	CONNECTOR, 1.5 X 1.5	1.00	\$9.66	11/30/2023 10:22:04 AM
MANYAR	240-B	VALVE, BACK SEATING 1/4" PIPE	1.00	\$2.68	12/5/2023 2:35:01 PM
MANYAR	R21CX06	CABLE, CHOKE 6 FT	2.00	\$43.04	10/14/2023 11:47:41 AM
MANYAR	ET10	CLAMP, HOSE 23/32" - 1"	4.00	\$9.47	11/19/2023 11:37:54 AM
MANYAR	325-3A	PIPE, MALE 3/16 ID X 1/8 MPT	2.00	\$3.25	11/18/2023 4:57:24 PM
MANYAR	49-12D	ELBOW, 90 3/4TUBE OD X 1/2 MPT	2.00	\$27.60	11/18/2023 4:57:24 PM
MANYAR	X124-A	ELOW, STREET45 1/8FPT X 1/8NPT	2.00	\$5.01	11/18/2023 4:57:25 PM
MANYAR	X115-A	ELOW, STREET 1/8 FPT X 1/8 NPT	2.00	\$5.77	11/18/2023 4:57:25 PM
MANYAR	120-DC	ADAPTER, 1/2" FPT X 3/8" NPT	2.00	\$11.78	11/18/2023 4:57:25 PM
MANYAR	112-C	NIPPLE, CLOSE 3/8" NPT	1.00	\$2.33	10/23/2023 2:29:33 PM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	85.00	\$507.51	10/23/2023 11:53:23 AM
MANYAR	H176	HOSE, FUEL 5/16"	8.00	\$27.85	9/5/2023 11:59:25 AM
MANYAR	X115-C	ELOW, STREET 3/8 FPT X 3/8 NPT	1.00	\$6.86	10/23/2023 12:53:07 PM



MANYAR	H175	HOSE, FUEL 1/4"	11.00	\$33.78	11/22/2023 11:40:42 PM
MANYAR	725-5B	FITTING, BARB 5/16ID X 1/4 MPT	1.00	\$4.15	9/6/2023 9:44:55 AM
MANYAR	X124-B	ELOW, STREET45 1/4FPT X 1/4NPT	2.00	\$8.84	9/5/2023 11:59:26 AM
MANYAR	112-B	NIPPLE, CLOSE 1/4" NPT	1.00	\$1.31	9/5/2023 12:37:00 PM
MANYAR	4TF005	FLUID, ASPEN FUEL 4 CYCLE	2.00	\$92.74	9/25/2023 10:30:53 AM
MANYAR	325-5B	PIPE, MALE 5/16 ID X 1/4 MPT	2.00	\$7.37	9/5/2023 11:59:25 AM
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	2.00	\$17.78	11/16/2023 1:17:22 PM
MANYAR	3051	GASKET, MATERIAL 1/64"	2.00	\$5.28	11/17/2023 8:13:24 AM
MANYAR	53-391	LUBRICANT, METHYL HYDRATE	1.00	\$7.96	11/22/2023 2:56:43 PM
MANYAR	325-5B	PIPE, MALE 5/16 ID X 1/4 MPT	2.00	\$7.37	11/22/2023 2:56:47 PM
MANYAR	08008	ADHESIVE, FAST TACK TRIM	1.00	\$17.50	11/22/2023 2:56:50 PM
MANYAR	410A	PAINT, PRIMER ETCH GREY 1K	1.00	\$74.29	11/22/2023 2:56:54 PM
MANYAR	59803	SILICONE, BLACK	1.00	\$13.93	9/26/2023 1:08:54 PM
MANYAR	07447	PAD, RED SCOTCH BRITE	1.00	\$1.86	9/26/2023 2:20:23 PM
MANYAR	110-CB	BUSHING, 3/8"NPT X 1/4 "FPT	1.00	\$1.74	11/23/2023 12:48:14 PM
MANYAR	BMT38	TEE, PIPE 3/8"	1.00	\$0.71	11/23/2023 12:48:17 PM
MANYAR	5P639	NIPPLE, PIPE 3/8 X 4	2.00	\$3.84	11/23/2023 12:48:21 PM
MANYAR	103-C	COUPLING, BRASS 3/8" FPT	1.00	\$4.54	11/23/2023 12:48:24 PM
MANYAR	103-B	COUPLING, BRASS 1/4" FPT	1.00	\$4.69	11/23/2023 12:48:35 PM
MANYAR	BV4103C	VALVE, BALL BRASS 3/8"	1.00	\$8.47	11/23/2023 12:48:38 PM
MANYAR	110-CB	BUSHING, 3/8"NPT X 1/4 "FPT	2.00	\$3.47	11/23/2023 12:48:42 PM
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	1.00	\$1.64	11/23/2023 12:48:45 PM
MANYAR	8345333	GAUGE, WET 1/4 NPT BM 300PSI	1.00	\$33.69	11/23/2023 12:48:49 PM
MANYAR	725-6B	FITTING, 3/8ID X 1/4MPT BRASS	1.00	\$3.14	11/23/2023 12:48:52 PM
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	1.00	\$10.48	11/23/2023 12:48:55 PM
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	1.00	\$10.48	11/23/2023 1:15:43 PM
MANYAR	20130	WRENCH, 15/16	1.00	\$28.25	11/24/2023 12:13:41 PM
MANYAR	2087067	SEALANT, PIPE THREAD 50 ML	1.00	\$37.16	11/21/2023 8:29:37 AM
MANYAR	11T162	WHEEL, ZIP CUT 6"X 3/64 X 7/8	2.00	\$22.58	11/27/2023 8:16:03 AM
MANYAR	276270N	VALVE. TRAILER TC-2	1.00	\$489.07	11/27/2023 5:45:01 PM
MANYAR	6237937	WEATHERSTRIP, 5/16 X 3/4	4.00	\$2.10	11/20/2023 1:58:03 PM
MANYAR	31614	HOSE, FLEX 1-1/4"X20	1.00	\$26.91	11/23/2023 9:34:47 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$17.21	11/28/2023 10:16:10 AM
MANYAR	DCF921B	GUN, IMPACT 1/2 DR	1.00	\$264.70	11/28/2023 10:16:11 AM

MANYAR	DWMT74736	SOCKET SET, 1/2 IN IMPACT	1.00	\$144.62	11/28/2023 10:16:11 AM
MANYAR	DCBP520C	BATTERY , 5.0AH W/ CHARGER	1.00	\$396.71	11/28/2023 10:16:11 AM
MANYAR	X124-B	ELOW, STREET45 1/4FPT X 1/4NPT	(1.00)	(\$4.42)	12/5/2023 9:42:37 AM
MANYAR	H504	HOSE, HEATER SILICONE 5/8"	5.00	\$79.22	11/21/2023 12:16:51 PM
MANYAR	1MNJ7	BUSHING, REDUCER 1/2 X 3/8	1.00	\$5.07	11/21/2023 12:39:21 PM
MANYAR	31623	HOSE, FLEX 1-1/4"X19X1-1/2"	1.00	\$26.55	11/22/2023 7:10:48 PM
MANYAR	31612	HOSE, FLEX 1-1/4"X17	1.00	\$24.29	11/22/2023 7:10:52 PM
MANYAR	31637	HOSE, FLEX 1-1/2"X17	1.00	\$26.59	11/22/2023 7:10:56 PM
MANYAR	17405	BELT	1.00	\$29.92	11/21/2023 4:08:53 PM
MANYAR	DCT4X25	TUBING, COPPER SOFT 1/4	1.00	\$2.80	11/21/2023 11:04:06 AM
MANYAR	110-DC	BUSHING, 1/2"NPT X 3/8 "FPT	1.00	\$3.09	11/21/2023 8:34:55 AM
MANYAR	61-4	NUT, STANDARD 1/4" TUBE OD	2.00	\$1.13	11/21/2023 11:04:06 AM
MANYAR	60-4	SLEEVE, STANDARD 1/4" TUBE OD	2.00	\$0.35	11/21/2023 11:04:07 AM
MANYAR	801-4-GRA-RL	HOSE, PUSH-LOK	10.00	\$48.81	11/21/2023 11:04:07 AM
MANYAR	SB2088B	BRUSH, CLEANING BRASS	2.00	\$8.17	11/21/2023 11:04:07 AM
MANYAR	110-CA	BUSHING, 3/8"NPT X 1/8 "FPT	2.00	\$4.91	11/21/2023 10:26:52 AM
MANYAR	X124-B	ELOW, STREET45 1/4FPT X 1/4NPT	1.00	\$4.42	12/5/2023 9:42:38 AM
MANYAR	X115-C	ELOW, STREET 3/8 FPT X 3/8 NPT	4.00	\$21.28	11/22/2023 10:15:30 AM
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	1.00	\$8.89	11/22/2023 10:15:34 AM
MANYAR	1MNJ7	BUSHING, REDUCER 1/2 X 3/8	1.00	\$5.07	11/22/2023 10:15:37 AM
MANYAR	112-C	NIPPLE, CLOSE 3/8" NPT	2.00	\$4.66	11/22/2023 10:15:41 AM
MANYAR	ECO-FEE	ECO-FEE	4.00	\$1.86	10/12/2023 2:39:05 PM
MANYAR	AERO-PT	CUSTOM COLOUR	4.00	\$202.63	10/12/2023 2:39:05 PM
MANYAR	PXL3M2C30	GREASE, PRECISION XL3 MOLY EP2	3.00	\$14.77	10/9/2023 12:51:19 PM
MANYAR	20042	FLUID, OIL GEAR 85W-140	3.00	\$51.50	10/9/2023 12:51:19 PM
MANYAR	20042	FLUID, OIL GEAR 85W-140	1.00	\$17.16	10/11/2023 8:49:12 PM
MANYAR	31372	DISC, SANDING CLEAN 6"120+ GR	1.00	\$114.41	11/6/2023 2:37:24 PM
MANYAR	ECO-FEE	ECO-FEE	4.00	\$1.86	11/7/2023 4:22:36 PM
MANYAR	31481	DISC, SANDING CLEAN 6" 220 GR	1.00	\$107.28	11/6/2023 2:37:24 PM
MANYAR	13C175	WHEEL, WIRE 3"	2.00	\$68.01	11/7/2023 11:13:11 AM
MANYAR	83100	BRUSH, WIRE 4 ROW	1.00	\$3.76	11/7/2023 11:13:11 AM
MANYAR	70031020	BRUSH, PAINT BRISTLE 2"	5.00	\$8.69	11/8/2023 8:37:38 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	5.00	\$7.59	11/8/2023 8:37:38 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	3.00	\$4.55	11/7/2023 12:43:47 PM

MANYAR	70031020	BRUSH, PAINT BRISTLE 2"	3.00	\$5.22	11/7/2023 12:43:48 PM
MANYAR	AERO-PT	CUSTOM COLOUR	2.00	\$101.32	11/7/2023 4:22:13 PM
MANYAR	AERO-PT	CUSTOM COLOUR	2.00	\$101.32	11/7/2023 4:22:22 PM
MANYAR	GPI/140	PIPE, GALVANIZED SCHED 40 1"	40.00	\$128.81	11/30/2023 2:32:40 PM
MANYAR	0825-05	VALVE, BALL BRASS 1/2"	1.00	\$12.88	11/16/2023 1:17:25 PM
MANYAR	20042	FLUID, OIL GEAR 85W-140	4.00	\$68.67	11/16/2023 2:17:37 PM
MANYAR	1026111-002	HITCHBAR, COACH	(3.00)	(\$1,038.31)	11/27/2023 7:53:40 PM
MANYAR	1026111-002	HITCHBAR, COACH	3.00	\$1,038.31	11/27/2023 7:53:40 PM
MANYAR	64805600	NUT, FLEXLOC 3/4-10 FULL	4.00	\$70.61	11/29/2023 11:13:19 PM
MANYAR	68538200	WASHER, LOCK 5/8 MED SPRING	6.00	\$4.08	11/29/2023 11:13:20 PM
MANYAR	1020340	BAR, DRAW	1.00	\$490.54	11/29/2023 11:13:13 PM
MANYAR	1026111-002	HITCHBAR, COACH	3.00	\$1,044.51	11/29/2023 11:13:14 PM
MANYAR	1026112-001	PLATE-HITCH SPL SPLICE	3.00	\$181.24	11/29/2023 11:13:15 PM
MANYAR	60910600	BOLT, HHCS 5/8-11X1 3/4 G5 Z/P	6.00	\$12.41	11/29/2023 11:13:16 PM
MANYAR	60952000	BOLT, 3/4X10X2 1/2 G5	4.00	\$20.00	11/29/2023 11:13:17 PM
MANYAR	64752400	NUT, HEX 5/8-11 FULL G5 Z/P	6.00	\$4.08	11/29/2023 11:13:18 PM
MANYAR	11L313	WHEEL, CUTOFF ZIP 3X1/16X3/8	2.00	\$14.07	11/30/2023 1:20:21 PM
MANYAR	HP/250	STEEL, PLATE MILD 1/4"	1.00	\$16.74	11/30/2023 3:07:49 PM
MANYAR	HA/11125	STEEL, ANGLE 1/8" X1" X 1"	5.00	\$7.40	11/27/2023 9:56:45 AM
MANYAR	36525	DISC, ROLOC GRINDING 2" 40G	2.00	\$11.12	11/29/2023 11:01:11 AM
MANYAR	01411	DISC, ROLOC GRINDING P120 3"	2.00	\$12.91	11/29/2023 11:01:16 AM
MANYAR	01A026	DRILL BIT, 13/32 SST JOBBER	1.00	\$17.79	12/4/2023 9:54:33 AM
MANYAR	33200	CLAMP, EXHAUST MUFFLER 2"	2.00	\$6.99	12/4/2023 9:54:38 AM
MANYAR	CSP117	PAINT, SPRAY ALUM HIGH HEAT	1.00	\$26.19	12/4/2023 11:15:08 AM
MANYAR	EAA-6384-A	RING GEAR, FLYWHEEL SPT	1.00	\$336.28	10/25/2023 12:30:55 PM
MANYAR	550049545	FLUID, TRANSMISSION TYPE F	4.00	\$41.92	10/12/2023 10:36:42 AM
MANYAR	550049545	FLUID, TRANSMISSION TYPE F	8.00	\$83.80	10/11/2023 2:45:13 PM
MANYAR	96670	MARKER, SECURITY CHECK RED	1.00	\$9.86	9/27/2023 11:04:31 AM
MANYAR	96669	MARKER, SECURITY CHECK YELLOW	1.00	\$9.86	9/27/2023 11:04:31 AM
MANYAR	96671	MARKER, SECURITY CHECK BLUE	1.00	\$9.86	9/27/2023 11:04:31 AM
MANYAR	45-1424	STRAP, RTCH TIE 4PK 1200LB	1.00	\$33.21	8/25/2023 7:12:33 PM
MANYAR	R21CX06	CABLE, CHOKE 6 FT	1.00	\$21.53	9/29/2023 10:56:38 AM
MANYAR	W12525	CUP HOLDER	2.00	\$27.86	9/29/2023 10:56:39 AM
MANYAR	X124-C	ELOW, STREET45 3/8FPT X 3/8NPT	2.00	\$10.11	9/28/2023 11:17:36 AM

MANYAR	110-DC	BUSHING, 1/2"NPT X 3/8 "FPT	1.00	\$3.09	9/28/2023 11:17:36 AM
MANYAR	DSHP13C12	FLUID, OIL DURON SHP 10W-30	12.00	\$78.81	8/28/2023 2:31:01 PM
MANYAR	1515	FILTER, OIL 1515	1.00	\$10.82	8/28/2023 2:31:01 PM
MANYAR	R12T	FILTER, FUEL R12T	1.00	\$38.11	8/28/2023 2:31:01 PM
MANYAR	120AT	FILTER,10MICRON	(1.00)	(\$212.28)	11/7/2023 7:27:11 AM
MANYAR	120AT	FILTER,10MICRON	1.00	\$212.28	11/7/2023 11:36:19 AM
MANYAR	40511	COIL, FLAME THROWER	1.00	\$97.64	8/29/2023 9:34:34 AM
MANYAR	C278	CAP, DISTRIBUTOR IGNITION	1.00	\$132.63	8/29/2023 9:34:34 AM
MANYAR	D104	ROTOR, IGNITION - STANDARD	1.00	\$27.45	8/29/2023 9:34:35 AM
MANYAR	3212	SPARK PLUG, B-6L	4.00	\$16.24	8/29/2023 9:34:36 AM
MANYAR	732507	WIRE, 14GA PURPLE	1.00	\$16.29	9/22/2023 2:54:37 PM
MANYAR	120AT	FILTER,10MICRON	1.00	\$212.28	11/7/2023 7:27:12 AM
MANYAR	51025	CONNECTOR, FLEX 2" EXHAUST	1.00	\$29.97	11/8/2023 3:38:56 PM
MANYAR	COL66-RED	TAPE, PVC RED	5.00	\$11.35	11/9/2023 5:14:28 PM
MANYAR	87-8014RL	WIRE, 16GA PINK 100'	1.00	\$23.29	11/9/2023 5:14:28 PM
MANYAR	768018RL	WIRE, 16GA PURPLE 100'	1.00	\$34.57	11/9/2023 5:14:29 PM
MANYAR	88-8010RL	WIRE, 16GA BLUE	1.00	\$190.32	11/16/2023 4:48:42 PM
MANYAR	87-8012RL	WIRE, 16GA ORANGE 100'	1.00	\$20.08	11/9/2023 5:14:29 PM
MANYAR	BP194LED	BULB, MINI LED INTERIOR WHITE	5.00	\$122.93	11/9/2023 5:14:29 PM
MANYAR	IB51036	TAPE, EXTERIOR HARNESS 3/4 X82	1.00	\$180.44	11/9/2023 6:15:45 PM
MANYAR	V10GW-8250	CABLE, 8GA GROUND 250 FT	1.00	\$434.73	11/9/2023 6:15:46 PM
MANYAR	V10PW-8RD250	CABLE, 8GA POWER 250FT	1.00	\$434.73	11/9/2023 6:15:46 PM
MANYAR	AF	Antifreeze	13.45	\$38.76	12/3/2023 1:00:41 AM
MANYAR	AF	Antifreeze	13.45	\$38.76	12/3/2023 1:00:41 AM
Total				\$13,462.30	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Coast Powertrain Ltd	12/5/2023 11:39:16 AM	12-008-A00	REFINISH ASSEMBLY	\$2,537.29	12/5/2023 11:39:16 AM
Coast Powertrain Ltd	12/5/2023 11:47:30 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	\$1,902.54	12/5/2023 11:47:29 AM
Sea To Sky Transfer	10/10/2023 11:37:13 AM	16-000-000	TRANSPORT COMPLETE UNIT	\$1,598.52	10/10/2023 11:37:13 AM
Total				\$6,038.36	

From: ["Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>](mailto:Mandeep.Shergill@vancouver.ca)  
To: ["Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>](mailto:derek.puzzuoli@hedgehogtech.com)  
CC: ["Neale, Brian" <Brian.Neale@vancouver.ca>](mailto:Brian.Neale@vancouver.ca)  
["Yip, Rosemary" <rosemary.yip@vancouver.ca>](mailto:rosemary.yip@vancouver.ca)  
["Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>](mailto:Sergio.Bevilacqua@vancouver.ca)  
["Goh, Bryan" <Bryan.Goh@vancouver.ca>](mailto:Bryan.Goh@vancouver.ca)  
Date: 9/8/2023 11:01:13 AM  
Subject: A7739 Green  
Attachments: CCG Work Order.pdf

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Morning Derek,

Can you please connect with Brian and provide a revised version of work needed for the green train if your satisfied with the previous rebuild and overall condition of the unit. Detailed parts and notes has been attached of the work completed back in 2016

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: **s.15(1)(l)** | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



## CCG Work Order

### Unit Number **A7739**

Color: **GREEN**                      Engine: **03.1L**  
 Year: **1965**                              GVW: **0**  
 Make: **C P**                                  Serial: **A7739**  
           **HUNTINGTON**  
 Model: **33469-T-7-HA**  
 Location: **N/A**

### WO# **577955**

Labor: **\$23,122.06**  
 Parts: **\$12,443.51**                      Date In: **08/21/2015**  
 Sublets: **\$1,652.83**                      Date Closed **12/15/2015**  
 Misc: **\$40.00**                              Order Status: **C**  
 Credits:  
   **\$37,258.40**                      CLOSED

#### Attachments

#### Notes

Location:  
Stanley Park Miniature Train

Contact:  
604-841-8580

Complaint:  
 >inspect  
 >rear axle overhaul  
 >set intake and exhaust valve  
 >replace spark plugs, coil, cap and rotor  
 >replace advance timing spring in distributor  
 >l/s trans/eng mount bolts backed off  
 >replace tranfer box both seals  
 >replace trans out put seal

Repairs Required:  
 >service trans  
 >engine tuneup

Part Ordered:  
 4 EA 1023016-001 HOOK-TRUCK-FRAME \$ 51.81 \$ 207.24 Cust Part 301-34254  
 4 EA 26193700 ROLLER BOLSTER 2" OD .75 ID NY \$ 7.59 \$ 30.36 Cust Part 301-61937  
 4 EA 1023015-001 BUSHING-ROLLER \$ 17.93 \$ 71.72 Cust Part 301-10443

4 EA 1023028-001 PLATE-WEAR BR/ROLLER \$ 9.46 \$ 37.84 Cust Part 301-53754  
 8 EA 27207700 SPRING DIE .75X1.5X4"FL (BLUE) \$ 28.69 \$ 229.52 Cust Part 201-72077  
 8 EA 1023026-001 SPRING-T BAR \$ 40.26 \$ 322.08 Cust Part 301-72085  
 4 EA 1023034-001 HANGER WELDMENT \$ 301.40 \$ 1,205.60 Cust Part 301-32690  
 8 EA 25235900 PIN CLEVIS 1/2X2 1/4 ZP \$ 0.88 \$ 7.04 Cust Part 290-52359  
 4 EA 1023034-001 HANGER WELDMENT \$ 301.40 \$ 1,205.60 Cust Part 301-32692  
 4 EA 1023024-001 HANGER-SAFETY BOLSTER BOLSTER \$ 30.36 \$ 121.44 Cust Part 301-32691  
 8 EA 1023025-001 SHIM-BOLSTER WEAR \$ 21.12 \$ 168.96 Cust Part 301-34254  
 8 EA 26451700 SEAL 1.375SHX2.437BX.375W \$ 9.57 \$ 76.56 Cust Part 290-64517  
 16 EA 20508300 BRG CONE 1.1250 ID \$ 43.57 \$ 697.07 Cust Part 201-05083  
 16 EA 20505200 BRG CUP 2.3125 OD \$ 25.10 \$ 401.56 Cust Part 201-05052  
 8 EA 27207300 SPRING DIE 1X2X4.5"FL (GREEN) \$ 42.53 \$ 340.23 Cust Part 201-72073  
 8 EA 27207100 SPRING DIE 1X2X4.5"FL (BLUE) \$ 49.61 \$ 396.88 Cust Part 201-72071  
 16 EA 1023030-001 PLATE-WEAR JOURNAL BOX \$ 14.52 \$ 232.32 Cust Part 301-53753  
 8 EA 1023118-001 SPACER-BRAKE INSIDE \$ 27.61 \$ 220.88 Cust Part 301-70079  
 8 EA 1023114-001 BOLT-INS-HNGR \$ 37.07 \$ 296.56 Cust Part 301-07368  
 8 EA 25234400 PIN CLEVIS 1/4X1 7/8 ZP \$ 0.33 \$ 2.64 Cust Part 290-52344  
 8 EA 25234300 PIN CLEVIS 1/4X1 3/8 ZP \$ 0.22 \$ 1.76 Cust Part 290-52343  
 16 EA 25235000 PIN CLEVIS 3/8X1 3/8 ZP \$ 0.51 \$ 8.18 Cust Part 290-52350  
 8 EA 68530800 WASHER FLAT 3/8 Z/P \$ 0.26 \$ 2.10 Cust Part 301-70085  
 8 EA 25234500 PIN CLEVIS 1/4X2 1/2 ZP \$ 0.44 \$ 3.52 Cust Part 290-52345  
 8 EA 1023116-001 SPACER-OUTSIDE BR \$ 13.31 \$ 106.48 Cust Part 301-70062  
 4 EA 24151600 LINK BRAKE CYL RH Z/P \$ 10.12 \$ 40.48 Cust Part 301-41516  
 4 EA 24151700 LINK BRAKE CYL LH Z/P \$ 10.12 \$ 40.48 Cust Part 301-41517  
 8 EA 27189300 SPRING COMPR.-BRAKE CYL. .72X. \$ 5.01 \$ 40.08 Cust Part 201-71893  
 8 EA 1023120-001 PIN-BR LVR \$ 31.68 \$ 253.44 Cust Part 301-51797  
 8 EA 25234500 PIN CLEVIS 1/4X2 1/2 ZP \$ 0.44 \$ 3.52 Cust Part 290-52345  
 all parts above orderd 09/10/2015 @ 09:47:13 ...500

Repairs Completed:

assisted in transportation....518/511  
 Sea to Sky transport called in to transfer unit from Stanley Park to Man Yards...500  
 >polished rusty train axle...857  
 >made 2 keys...857  
 >set up shaft in lathe and polish to accept bearings,measure and remachine to new specs,re and re worm wheel,measure components for install...828  
 >Disassembled #2axle diffrential, noticed axle was damaged from bearing spun and, brought new shafts from Stanley park and it needs to be machine....518  
 09/09/2015  
 ordered trans gasket and filter....500  
 09/10/2015 @ 09:47:33  
 ordered parts ....500  
 >set intake and exhaust valve.....518  
 >replaced spark plugs and noticed timing advance spring was broken needs to be replace...POO.....518  
 >removed transfer box seals .....518  
 >removed double u joint etc and removed trans out put seal.....518  
 >Re/Re fuel tank and pressure washed it....518  
 > filled tank of fuel to 142 lts and dropped off at train.....479

replace wood board for PSI gauge [as per sample].....730  
 complete overhaul of bogies springs, keepers, main pins , saftey bars, replaced all suspesnion hardware . replaced some brake actuators, complete brAke system  
 overhaul which included adjusters, bars, pads, cotter pins .took major slop out of brake shoes so pad touches wheel at all times, replaced pins rear control bars .washed  
 complete unit orginized for the morning .replaced transmssion seals, replaced drop box seals .had to get material fomr lordco to make the drop box flange gaskets made  
 gasketsand insatllede .pressed wheels on to the shaft and installed axle in the bogie.pressed out and reinstalled new bearing cones and seals for the new shaft .greased  
 shafts. replaced all diff oils . installed yokes for the drop box one bogie ready to install other one needs the new shafts drilled for the bearing nuts on both sides.

10/05/2015  
 get the bogie guide wheels made from the machine shop  
 drill cotter pin holes in shaft/cut bolts to required size...828  
 MAKE SHIMS FOR MOUNTING BRACKETS 632 DONE  
 Made brkt for train....679  
 make bushings for rollers...857

things left to do :  
 get new shaft drilled for the bearing cotter pins  
 order in the right main pins or install the right bolts and cut  
 replace spark plug boots  
 clean up wiring  
 check radio for static  
 replace airlines as needed  
 insatll bogies  
 Machined distributor clamp. #837

10/06/2015  
 machine two spacers as per specs required...822

Reopened to enter Sea to Sky sublet - ps  
 01/22/2016 @ 07:54:47

Labor						
MID	Start Time	Repair Code	Repair Description	Hours	Cost	Posted
AFM				2.93167	293.17	
837	10/06/2015 18:13:16	1010B49600BS	Repair from PMManufacturing   Misc Brackets   Fabricate	1.65167	165.17	10/6/2015
837	10/06/2015 20:32:53	1010B49600BS	Repair from PMManufacturing   Misc Brackets   Fabricate	1.28000	128.00	10/6/2015
CRP				1.20889	120.89	
730	10/02/2015 13:47:09	1CARX47653BS	Repair from PMCARPENTER SHOP   MILLWORK   Machining	1.20056	120.06	10/2/2015
730	10/06/2015 08:12:28	1CARX47653BS	Repair from PMCARPENTER SHOP   MILLWORK   Machining	0.00833	0.83	10/6/2015
heq				200.10366	20923.21	
STC19 59	08/21/2015 06:29:00	1000000Y64BS	Repair from PMUnit Services   Complete Unit   Service Truck	5.06972	152.09	8/25/2015
511	08/21/2015 06:33:01	1000000210BN	Repair from PMUnit Services   Complete Unit   Move/Transport	5.40583	575.72	8/25/2015



518	08/21/2015 06:50:00	1000000210BN	Repair from PMUnit Services   Complete Unit   Move/Transport	4.71972	502.65	10/8/2015
518	08/21/2015 11:54:44	1000000210BN	Repair from PMUnit Services   Complete Unit   Move/Transport	0.44556	47.45	8/25/2015
518	08/25/2015 06:33:14	1000000020BS	Repair from PMUnit Services   Complete Unit   Inspect	0.40389	43.01	8/25/2015
518	08/25/2015 06:57:36	1000000590BS	Repair from PMUnit Services   Complete Unit   Jack & Block	0.01694	1.80	8/25/2015
518	08/25/2015 06:58:43	1000000590BS	Repair from PMUnit Services   Complete Unit   Jack & Block	2.18028	232.20	8/25/2015
511	08/25/2015 08:30:58	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.39806	255.39	8/25/2015
518	08/25/2015 09:10:04	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.46972	263.03	8/25/2015
511	08/25/2015 10:55:41	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	0.58278	62.07	8/25/2015
511	08/25/2015 12:04:21	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.89194	307.99	8/25/2015
518	08/25/2015 12:05:57	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.88722	307.49	8/25/2015
518	08/27/2015 06:28:08	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	5.06333	539.25	8/27/2015
518	08/27/2015 12:04:03	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.89528	308.35	8/27/2015
511	08/27/2015 12:06:37	1000000020BS	Repair from PMUnit Services   Complete Unit   Inspect	2.85028	303.55	8/27/2015
511	08/28/2015 06:33:22	1000000020BS	Repair from PMUnit Services   Complete Unit   Inspect	0.35306	37.60	8/28/2015
518	08/28/2015 08:30:20	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.97778	317.13	8/31/2015
518	08/28/2015 11:59:10	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.97361	316.69	8/28/2015
518	08/31/2015 06:36:41	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	0.16028	17.07	8/31/2015
518	08/31/2015 12:03:24	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.93806	312.90	8/31/2015
518	09/01/2015 06:52:13	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	4.84250	515.73	9/1/2015
518	09/01/2015 12:03:12	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	2.90139	309.00	9/1/2015
518	09/02/2015 14:18:36	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	0.67000	71.36	9/2/2015
544	09/08/2015 07:50:58	1000000590BS	Repair from PMUnit Services   Complete Unit   Jack & Block	2.95000	314.18	9/8/2015
518	09/10/2015 06:33:51	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	1.90500	202.88	9/10/2015
518	09/10/2015 08:28:15	PMP BS	PM ServiceP Service List	3.02667	322.34	9/16/2015
518	09/10/2015 12:03:02	1033000080BS	Repair from PMIgnition System   System   Tune-up	0.26611	28.34	9/10/2015
518	09/16/2015 06:31:27	1033000080BS	Repair from PMIgnition System   System   Tune-up	5.10306	543.48	9/16/2015
518	09/16/2015 12:02:25	1033000080BS	Repair from PMIgnition System   System   Tune-up	2.94278	313.41	9/16/2015
518	09/18/2015 09:47:38	1033000080BS	Repair from PMIgnition System   System   Tune-up	0.43778	46.62	9/18/2015
518	09/18/2015 11:55:28	1033000080BS	Repair from PMIgnition System   System   Tune-up	0.10556	11.24	9/18/2015
518	09/18/2015 12:01:53	PMP BS	PM ServiceP Service List	2.95556	314.77	9/18/2015
518	09/28/2015 10:03:08	PMP BS	PM ServiceP Service List	1.51861	161.73	9/28/2015
518	09/28/2015 12:06:17	PMP BS	PM ServiceP Service List	2.87139	305.80	9/28/2015
518	09/29/2015 06:30:05	PMP BS	PM ServiceP Service List	5.29722	564.15	9/29/2015
518	09/29/2015 12:06:38	PMP BS	PM ServiceP Service List	2.89611	308.44	9/30/2015
518	09/30/2015 09:34:35	PMP BS	PM ServiceP Service List	2.22833	237.32	9/30/2015

518	09/30/2015 12:02:30	PMP BS	PM ServiceP Service List	4.73750	504.54	9/30/2015
518	10/01/2015 06:50:00	1044H50100BS	Repair from PMFuel System   Hose   Re&Re	4.66667	497.00	10/8/2015
518	10/01/2015 12:00:00	1044H50100BS	Repair from PMFuel System   Hose   Re&Re	2.91667	310.63	10/8/2015
518	10/02/2015 06:50:00	1044H50100BS	Repair from PMFuel System   Hose   Re&Re	1.66667	177.50	10/8/2015
518	10/02/2015 08:30:00	1033000080BS	Repair from PMIgnition System   System   Tune-up	3.00000	319.50	10/8/2015
518	10/02/2015 12:00:00	1033000080BS	Repair from PMIgnition System   System   Tune-up	2.91667	310.63	10/8/2015
518	10/03/2015 06:32:05	PMP BS	PM ServiceP Service List	12.04111	1,282.38	10/3/2015
544	10/03/2015 06:39:09	PMP BS	PM ServiceP Service List	11.92472	1,269.98	10/3/2015
518	10/04/2015 06:28:24	PMP BS	PM ServiceP Service List	11.05778	1,177.65	10/4/2015
544	10/04/2015 06:28:31	PMP BS	PM ServiceP Service List	11.05667	1,177.54	10/4/2015
518	10/05/2015 06:50:00	PMP BS	PM ServiceP Service List	4.66667	497.00	10/8/2015
544	10/05/2015 07:36:17	PMP BS	PM ServiceP Service List	3.95944	421.68	10/5/2015
518	10/05/2015 12:00:00	PMP BS	PM ServiceP Service List	0.90000	95.85	10/8/2015
544	10/05/2015 12:06:05	PMP BS	PM ServiceP Service List	2.85694	304.26	10/5/2015
518	10/06/2015 06:50:00	PMP BS	PM ServiceP Service List	4.66667	497.00	10/8/2015
544	10/06/2015 07:48:08	PMP BS	PM ServiceP Service List	3.85028	410.05	10/19/2015
518	10/06/2015 12:00:00	PMP BS	PM ServiceP Service List	4.91667	523.63	10/8/2015
544	10/06/2015 12:07:46	PMP BS	PM ServiceP Service List	4.85417	516.97	10/6/2015
518	10/07/2015 06:50:00	1000000210BN	Repair from PMUnit Services   Complete Unit   Move/Transport	3.66667	390.50	10/8/2015
544	10/07/2015 07:19:11	1000000210BS	Repair from PMUnit Services   Complete Unit   Move/Transport	3.18028	338.70	10/8/2015
518	10/07/2015 10:30:00	1000000000BS	Repair from PMUnit Services   Complete Unit   Systems	4.00000	426.00	10/8/2015
<i>MCH</i>				13.88973	1388.98	
857	08/28/2015 12:26:43	Z010TOO169BS	Non-Eqpmt RepairManufacturing   Special Tools   Refurbish	1.62028	162.03	8/28/2015
828	08/31/2015 09:26:57	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	0.99000	99.00	9/1/2015
828	09/01/2015 08:11:24	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	1.20556	120.56	9/1/2015
828	09/01/2015 10:57:34	1022A00100BS	Repair from PMRear Drive Axle   Differential   Re&Re	1.15472	115.47	9/1/2015
828	10/05/2015 07:46:13	1022S82100BS	Repair from PMRear Drive Axle   Shaft Axle Rear   Re&Re	2.06306	206.31	10/5/2015
857	10/05/2015 10:03:34	1SMEY40000BS	Repair from PMShop Operations   Gen.Manufacturing   Systems	1.44361	144.36	10/5/2015
857	10/05/2015 12:01:57	1SMEY40000BS	Repair from PMShop Operations   Gen.Manufacturing   Systems	1.99278	199.28	10/5/2015
846	10/07/2015 09:15:02	1010B49600BS	Repair from PMManufacturing   Misc Brackets   Fabricate	1.64722	164.72	10/7/2015
822	10/08/2015 06:48:15	1010B49600BS	Repair from PMManufacturing   Misc Brackets   Fabricate	1.77250	177.25	10/8/2015
<i>trk</i>				0.46556	49.58	
479	10/02/2015 08:09:21	1044H50100BS	Repair from PMFuel System   Hose   Re&Re	0.46556	49.58	10/2/2015

<i>WLD</i>				<b>3.46223</b>	<b>346.23</b>	
632	10/05/2015 09:24:03	1010B49697BS	Repair from PMManufacturing   Misc Brackets   Shear	0.51861	51.86	10/5/2015
679	10/05/2015 10:58:40	1010TOO600BS	Repair from PMManufacturing   Special Tools   Fabricate	0.55028	55.03	10/6/2015
840	10/05/2015 11:00:19	1000000002BS	Repair from PMUnit Services   Complete Unit   Evaluate	0.49056	49.06	10/5/2015
679	10/05/2015 12:00:13	1010TOO600BS	Repair from PMManufacturing   Special Tools   Fabricate	1.90278	190.28	10/6/2015
				<b>Labor total:</b>	<b>23,122.06</b>	

<b>Parts</b>							
Store Room	Part Number	Part Description	Issued	Quantity	Unit Cost	Total Cost	Posted
EQUIPMENT STORES	260013768	NUT, HEX, UNF CASTLE 7/8IN	8/28/2015	2.00	1.84	3.67	10/6/2015
EQUIPMENT STORES	1-4995	FILTER AND GASKET	9/10/2015	1.00	33.77	33.77	10/6/2015
EQUIPMENT STORES	280011550	OIL, ENGINE DURON SHP 10W-30	9/10/2015	1.00	5.14	5.14	10/6/2015
EQUIPMENT STORES	1758-42	TQ TYPE F-1LTR	9/11/2015	12.00	7.41	88.97	10/6/2015
EQUIPMENT STORES	D104	ROTOR, IGNITION - STANDARD AL99	9/11/2015	1.00	19.72	19.72	10/6/2015
EQUIPMENT STORES	C144	CAP, DISTRIBUTOR - STANDARD NCA012106A	9/11/2015	1.00	21.99	21.99	10/6/2015
EQUIPMENT STORES	216	spark plug	9/11/2015	4.00	10.39	41.55	10/6/2015
EQUIPMENT STORES	52293	ING WIRES	9/11/2015	1.00	37.13	37.13	10/6/2015
EQUIPMENT STORES	40511	coil flame-T	9/16/2015	1.00	70.56	70.56	10/6/2015
EQUIPMENT STORES	3032	FLASHER CONN	9/17/2015	1.00	4.72	4.72	10/6/2015
EQUIPMENT STORES	1189	FILTER	9/17/2015	1.00	9.92	9.92	10/6/2015
EQUIPMENT STORES	CR10700	seal	9/17/2015	2.00	8.37	16.74	10/6/2015
EQUIPMENT STORES	CR15635	SEAL	9/17/2015	2.00	10.93	21.85	10/6/2015
EQUIPMENT STORES	200034669	FILTER, FUEL,water seperation RACOR R12T	9/22/2015	1.00	22.03	22.03	10/6/2015
EQUIPMENT STORES	freight	FREIGHT	9/23/2015	1.00	33.29	33.29	10/6/2015
EQUIPMENT STORES	24660200	CP Huntington Service Manuel	9/24/2015	1.00	187.23	187.23	10/6/2015
EQUIPMENT STORES	240031039	METHYL HYDRATE RECOCHEM 13-391	10/1/2015	1.00	4.18	4.18	10/6/2015
EQUIPMENT STORES	D1NL-6584-B	v/c gasket	10/1/2015	1.00	62.68	62.68	10/6/2015
EQUIPMENT STORES	8N-6782-A	breather gasket	10/1/2015	1.00	31.38	31.38	10/6/2015
EQUIPMENT STORES	EaF-6570-A	grommet	10/1/2015	2.00	16.83	33.67	10/6/2015
EQUIPMENT STORES	al99	ignition rotor	10/1/2015	1.00	11.29	11.29	10/6/2015
EQUIPMENT STORES	my 409	dist cap	10/1/2015	1.00	83.19	83.19	10/6/2015
EQUIPMENT STORES	freight	FREIGHT	10/1/2015	1.00	49.58	49.58	10/6/2015
EQUIPMENT STORES	250030608	WEATHERHEAD 3400X2	10/1/2015	1.00	2.22	2.22	10/6/2015
EQUIPMENT STORES	270013006	HOSE, FUEL 5/16 27003	10/1/2015	5.00	2.51	12.57	10/6/2015
EQUIPMENT STORES	250041530	WEATHERHEAD 05705B102	10/1/2015	1.00	2.93	2.93	10/6/2015

Parts							
Store Room	Part Number	Part Description	Issued	Quantity	Unit Cost	Total Cost	Posted
EQUIPMENT STORES	200022218	CLAMP, HOSE, ETM4	10/1/2015	4.00	1.64	6.55	10/6/2015
EQUIPMENT STORES	250041548	WEATHERHEAD 1555	10/1/2015	2.00	3.28	6.55	10/6/2015
EQUIPMENT STORES	210060729	TERMINAL, SHRINK, 22-18 #10 555.9021	10/1/2015	25.00	0.88	21.95	10/6/2015
EQUIPMENT STORES	freight	FREIGHT	10/2/2015	1.00	9.83	9.83	10/6/2015
EQUIPMENT STORES	CR13649	SEAL	10/2/2015	4.00	9.45	37.78	10/6/2015
EQUIPMENT STORES	250014925	HOSE, SHOP MULTI-PURPOSE 3/8" 801-6	10/2/2015	51.00	3.83	195.51	10/6/2015
MANITOBA BULK OIL STORES	240031271	ANTIFREEZE, HYBRID ES COMPLEAT #CC2838	10/5/2015	9.00	3.72	33.47	10/6/2015
EQUIPMENT STORES	260020045	DRILL BIT, 1/8 SST JOBBER WLT 01A008	10/5/2015	1.00	2.45	2.45	10/6/2015
EQUIPMENT STORES	3045	1/64 gasket material	10/5/2015	1.00	4.27	4.27	10/6/2015
EQUIPMENT STORES	250030608	WEATHERHEAD 3400X2	10/5/2015	1.00	2.22	2.22	10/6/2015
EQUIPMENT STORES	270013006	HOSE, FUEL 5/16 27003	10/5/2015	3.00	2.51	7.54	10/6/2015
EQUIPMENT STORES	250041530	WEATHERHEAD 05705B102	10/5/2015	1.00	2.93	2.93	10/6/2015
EQUIPMENT STORES	240021253	PAINT, SPRAY BLACK ENAMEL CDA1600	10/5/2015	1.00	8.88	8.88	10/6/2015
EQUIPMENT STORES	RAC120a	filter assy	10/5/2015	2.00	203.02	406.05	10/6/2015
EQUIPMENT STORES	200022218	CLAMP, HOSE, ETM4	10/5/2015	4.00	1.64	6.55	10/6/2015
EQUIPMENT STORES	270013006	HOSE, FUEL 5/16 27003	10/6/2015	5.00	2.51	12.57	10/6/2015
EQUIPMENT STORES	250041548	WEATHERHEAD 1555	10/6/2015	2.00	3.28	6.55	10/6/2015
EQUIPMENT STORES	250030616	WEATHERHEAD X115-B	10/6/2015	2.00	3.40	6.79	10/6/2015
EQUIPMENT STORES	240044214	SEALANT, TEFLON LOCTITE 56747	10/6/2015	1.00	16.02	16.02	10/6/2015
EQUIPMENT STORES	240020552	EMERY ROLL, 1X150ft 3M 05009	10/6/2015	2.00	0.74	1.49	10/6/2015
EQUIPMENT STORES	240020289	PADS, 3M RED SCOTCH BRITE 07447	10/6/2015	1.00	1.02	1.02	10/6/2015
EQUIPMENT STORES	200010734	CABLE STARTER, 4 GA 669265 25'RL	10/6/2015	5.00	3.79	18.96	10/6/2015
EQUIPMENT STORES	200017515	LUG, BATTERY 4 GA GA 3/8 76-2314	10/6/2015	1.00	5.89	5.89	10/6/2015
EQUIPMENT STORES	200017531	LUG, BATTERY 4 GA 5/16 76-2313	10/6/2015	1.00	1.66	1.66	10/6/2015
EQUIPMENT STORES	250041043	PARKER PUSH LOCK 30182-4-6B	10/6/2015	4.00	3.96	15.86	10/6/2015
EQUIPMENT STORES	280010026	GREASE FITTING, 1/8 NPT 45* 987-18-22	10/6/2015	1.00	1.51	1.51	10/6/2015
EQUIPMENT STORES	250610440	FITTING, HYDRAULIC, 0107-04-04	10/6/2015	1.00	2.42	2.42	10/6/2015
EQUIPMENT STORES	250030517	WEATHERHEAD 3350X4	10/6/2015	1.00	3.51	3.51	10/6/2015
EQUIPMENT STORES	10435	dynamat extreme	10/6/2015	1.00	130.99	130.99	10/6/2015
EQUIPMENT STORES	260033626	BATTERY, AA ALKALINE 2L0801F9	10/7/2015	4.00	0.34	1.36	10/6/2015
EQUIPMENT STORES	240021253	PAINT, SPRAY BLACK ENAMEL CDA1600	10/7/2015	3.00	8.88	26.65	10/6/2015
EQUIPMENT STORES	240020313	EMERY CLOTH, COARSE 3M 02433	10/7/2015	1.00	2.63	2.63	10/6/2015

Parts							
Store Room	Part Number	Part Description	Issued	Quantity	Unit Cost	Total Cost	Posted
EQUIPMENT STORES	240020337	SAFETY WALK BLACK, 6"x60' 3M#30007	10/7/2015	9.00	5.87	52.81	10/6/2015
EQUIPMENT STORES	260021126	WRENCH, ALLEN STD, AWL 3/32 EKLIND	10/7/2015	1.00	0.30	0.30	10/6/2015
EQUIPMENT STORES	260021134	ALLEN WRENCH, STD, AWL 7/64 BBT 519004	10/7/2015	1.00	0.37	0.37	10/6/2015
EQUIPMENT STORES	260021142	ALLEN WRENCH, STD, AWL 1/8 BBT 519005	10/7/2015	1.00	0.40	0.40	10/6/2015
EQUIPMENT STORES	240021249	PAINT, SPRAY BLACK ZERO-RUST 28-62SP	10/7/2015	1.00	20.85	20.85	10/6/2015
EQUIPMENT STORES	240044214	SEALANT, TEFLON LOCTITE 56747	10/7/2015	1.00	16.02	16.02	10/6/2015
EQUIPMENT STORES	1023016-001	hook-truck-frame	10/8/2015	4.00	67.87	271.49	10/6/2015
EQUIPMENT STORES	26193700	roller bolster 2'od .75 id	10/8/2015	4.00	9.94	39.77	10/6/2015
EQUIPMENT STORES	1023015-001	bushing-roller	10/8/2015	4.00	23.49	93.95	10/6/2015
EQUIPMENT STORES	1023028-001	plate-wear-br/roller	10/8/2015	4.00	12.39	49.57	10/6/2015
EQUIPMENT STORES	27207700	spring die .75x1.5x4'fl blue	10/8/2015	8.00	37.58	300.67	10/6/2015
EQUIPMENT STORES	1023026-001	spring-t bar	10/8/2015	8.00	52.74	421.92	10/6/2015
EQUIPMENT STORES	1023034-001	HANGER WELDMENT	10/8/2015	4.00	394.83	1,579.34	10/6/2015
EQUIPMENT STORES	25235900	PIN CLEVIS 1/2X2 1/4 ZP	10/8/2015	8.00	1.15	9.23	10/6/2015
EQUIPMENT STORES	1023024-001	HANGER SAFETY BOLSTER BOLSTER	10/8/2015	4.00	39.77	159.09	10/6/2015
EQUIPMENT STORES	1023025-001	SHIM-BOLSTER WEAR	10/8/2015	8.00	27.67	221.33	10/6/2015
EQUIPMENT STORES	26451700	SEAL 1.375SHX2.4375W	10/8/2015	8.00	12.54	100.29	10/6/2015
EQUIPMENT STORES	20508300	BRG CONE 1.1250 ID	10/8/2015	16.00	57.08	913.23	10/6/2015
EQUIPMENT STORES	20505200	bbrg cup 2.3125 od	10/8/2015	16.00	32.88	526.10	10/6/2015
EQUIPMENT STORES	27207300	SPRING DIE 1X2X4.5"FL (GREEN)	10/8/2015	8.00	55.71	445.71	10/6/2015
EQUIPMENT STORES	27207100	SPRING DIE 1X2X4.5"LF BLUE	10/8/2015	8.00	64.99	519.92	10/6/2015
EQUIPMENT STORES	1023030-001	PLATE-WEAR JOURNAL BOX	10/8/2015	16.00	19.02	304.33	10/6/2015
EQUIPMENT STORES	1023118-001	SPANCER-BRAKE INSIDE	10/8/2015	8.00	36.17	289.36	10/6/2015
EQUIPMENT STORES	1023114-001	BOLT-INS-HNGR	10/8/2015	8.00	48.56	388.49	10/6/2015
EQUIPMENT STORES	25234400	CLEVIS PIN 1/4X1 7/8 ZP	10/8/2015	8.00	0.43	3.46	10/6/2015
EQUIPMENT STORES	25235000	PIN CLEVIS 3/8X1 3/8 ZP	10/8/2015	16.00	0.67	10.69	10/6/2015
EQUIPMENT STORES	68530800	WASHER FLAT 3/8 ZP	10/8/2015	8.00	0.34	2.72	10/6/2015
EQUIPMENT STORES	25234500	CLEVIS PIN 1/4X2 1/2 ZP	10/8/2015	8.00	0.58	4.61	10/6/2015
EQUIPMENT STORES	1023116-001	SPACER-OUTSIDE BR	10/8/2015	8.00	17.44	139.49	10/6/2015
EQUIPMENT STORES	24151600	LINJK BRAKE CYL RH ZP	10/8/2015	4.00	13.26	53.03	10/6/2015
EQUIPMENT STORES	24151700	LINK BRAKE LH ZP	10/8/2015	4.00	13.26	53.03	10/6/2015
EQUIPMENT STORES	1023120-001	PIN-BR LVR	10/8/2015	8.00	41.50	332.01	10/6/2015
EQUIPMENT STORES	25234500	CLEVIS PIN 1/4X2 1/2 ZP	10/8/2015	8.00	0.58	4.61	10/6/2015

Parts							
Store Room	Part Number	Part Description	Issued	Quantity	Unit Cost	Total Cost	Posted
EQUIPMENT STORES	27189300	spring comp-brake cyl	10/8/2015	3.00	6.56	19.69	10/6/2015
EQUIPMENT STORES	25234300	pin,clevis 1/4 x 1 3/8	10/8/2015	8.00	0.29	2.30	10/6/2015
EQUIPMENT STORES	CR410308	SEAL	10/9/2015	4.00	14.72	58.90	10/6/2015
EQUIPMENT STORES	freight	FREIGHT	10/9/2015	1.00	706.89	706.89	10/6/2015
EQUIPMENT STORES	10700	SEAL	10/13/2015	4.00	35.66	142.62	10/6/2015
EQUIPMENT STORES	CR15635	SEAL	10/13/2015	4.00	40.23	160.92	10/6/2015
EQUIPMENT STORES	1023034-001	HANGER WELDMENT	10/21/2015	4.00	394.83	1,579.34	10/6/2015
EQUIPMENT STORES	27189300	spring comp-brake cyl	10/21/2015	5.00	6.56	32.82	10/6/2015
EQUIPMENT STORES	BSP31MHC	battery	10/27/2015	1.00	292.22	292.22	10/6/2015
EQUIPMENT STORES	BSP78DTRW	BATTERY DUAL TERMINAL	10/27/2015	1.00	199.21	199.21	10/6/2015
<b>Parts total:</b>						<b>12,443.51</b>	

Sublets						
Vendor	Date Back	Repair Code	Repair Description	Total Cost	Posted	
SEA TO SKY TRANSPORT	8/28/2015	1000000210BN	Unit Services   Complete Unit   Move/Transport	877.01	10/28/2015	
SEA TO SKY TRANSPORT	9/10/2015	1000000210BN	Unit Services   Complete Unit   Move/Transport	775.82	1/22/2016	
<b>Sublet total:</b>				<b>1,652.83</b>		

Misc. Costs				
Code	Description	Total Cost	Posted	
RECHRG BAT	Recharged Battery Cost	40.00	10/22/2015	
		<b>40.00</b>		

Credit Date	Credit Description	Total Cost	Date Posted
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**WO # 226131**

**Open Date** 6/12/2023 3:33:05 PM  
**Complete Date** 11/24/2023 7:38:24 AM  
**Close Date**

**Labor** \$113,068.35  
**Parts** \$69,150.60  
**Fluid** \$77.18  
**Commercial** \$4,293.09  
**Total** \$186,589.21

**Unit Number A7739**

Job Notes		
Job	Change Time	Note
CAL ADJUST COUNTER WEIGHT	6/29/2023 12:07:31 PM	weighed unit 5,800 lbs. total train bogie assemblies 800 lbs. each
CLEAN TANK	9/14/2023 2:35:25 PM	>REMOVED FUEL TANK, PRESSURE WASHED THE INSIDE AND USED MATHYL HYDRATE TO REMOVED ANY MOSITURE.....518
CLEAN UNIT SERVICES	10/30/2023 7:00:25 AM	>WASHED UNIT.....518 >SORTED OUT ALL LEFT OVER WIRES, BATTERY CABLE AND CONNECTORS ETC FOR NEXT TRAIN.....518
INSTALL AIR SUPPLY SYSTEM	6/19/2023 6:33:20 AM	Install rebuilt compressor
INSTALL AIR SUPPLY SYSTEM	6/21/2023 11:13:22 AM	>REMOVED COMPRESSOR MOUNTING PLATED CLEANED AND INSPECTED FOR CRACKS ETC ...518 >INSTALLED IT BACK IN WITH NEW HARD WARES.....518 >INSTALLED COMPRESSOR AND TOP UP OIL ETC.....518 >OLD COMP BELT WAS MISSING SO MEASURED COMPRESSOR BELT LENGTH, PURCHASED NEW ONE FROM STORES AND INSTALLED IT BACK ON.....518 >WENT TO GREEN LINE TO GET COMP DISCHARGE LINE MADE IN WIRE BRAIDED .....518 >INSTALLED COMP DISCHARGE LINE.....518
INSTALL CONSTRUCTION	7/6/2023 2:23:17 PM	Install solid wood floor in pit 52 as per Rob Veer`s drawing
INSTALL CONSTRUCTION	7/27/2023 12:37:42 PM	cut pc of plywood to fill in escape hatch by pit 52, 3/4" plywood minimum with 2x4 attached underneath to provide extra strength between frame. Leave enough room for 3/16" plate to be added on top without creating a tripping hazard.
OTHER MAINT DRILL/TAP	9/6/2023 10:08:05 AM	drill/tap 3/8 NPT into new piping
OTHER MAINT DRILL/TAP	9/7/2023 9:52:32 AM	machine new exhaust coupler
OTHER MAINT POWERTRAIN	9/8/2023 7:53:26 AM	repairs to Stanley Park Train assemblies
OTHER MAINT POWERTRAIN	9/8/2023 10:24:48 AM	machine new coolant pipe adaptor
OTHER MAINT POWERTRAIN	10/10/2023 2:43:41 PM	machine new stud for brass acorn nut
OTHER MAINT POWERTRAIN	10/30/2023 7:02:36 AM	>INSTALLED BOGGIES AND CONNECT AIR LINE AND TESTED IT FOR LEAK ETC....OKAY.....518 >INSTALLED DRIVE LINES ETC.....518
OVERHAUL POWERTRAIN	11/19/2023 5:53:43 PM	made brackets to install fan/alternator drive shaft and installed.....855
REBUILD COMP POWERTRAIN	9/13/2023 7:34:55 AM	take dimensions of crank shaft pulley assembly
REFINISH ASSEMBLY	10/13/2023 11:04:39 AM	Prepped L and R lower front section of train of green with 180 grit, featheredged with 220 grit, and lastly with 320 grit. Featheredged all burn marks, sanded area with 400 grit, and applied primer. Sanded primer with 600 grit, masked, mixed paint, and painted L and R lower side of front

		<p>train with light green.</p> <p>Removed masking paper, and fine lined tape lower front section of train to paint and refinish gold stripes.</p> <p>Sanded rear section of train with 320 grit, applied primer as needed, prepped with 600 grit, masked train, mixed paint, and painted rear section of train with dark green.</p> <p>Sanded and removed all names of train as per Superintendent and painted under seat part section of train with dark green.</p> <p>Removed all black paint splatter with wash and grease removal.</p> <p>Sanded Front Nose (Cowcatcher) with 320 grit, applied primer, sanded with 400 grit, and painted front cowcatcher with light green paint.</p> <p>Touched up paint the train including the roof, the fastener heads, the buck rivets, and where large chips were visible with light green and dark green.</p> <p>DON - <span style="background-color: #f0f0f0;">s.22(1)</span> Jason</p>
REFINISH ASSEMBLY	10/20/2023 8:25:48 AM	Touched up rivet heads, fastener heads, and minor chips on train.
REFINISH BELT'S	8/31/2023 1:05:08 PM	machine pulley V-groove to accept larger belt
REFINISH POWERTRAIN	10/12/2023 7:38:01 AM	repairs for the Stanley Park Train assemblies
REFINISH POWERTRAIN	10/12/2023 7:39:24 AM	cut down 1/4" bolts and locktight acorn nuts onto threaded stud
REPAIR REPL AIR LINE	6/21/2023 11:13:22 AM	>REPLACED SEVERAL AIR LINE AROUND THE COMPRESSOR .....518 >REPLACED SOME FITTING AT THE RELAY VALVES.....518
REPAIR REPL AIR LINE	9/14/2023 2:08:55 PM	>REPLACED FEW MORE AIR LINES TO STEEL BRADED.....518
REPAIR REPL ALTERNATOR	9/14/2023 2:18:08 PM	>REMOVED ALTERNATOR AND ITS PULLEY, GAVE TO MACHINE SHOP FOR MACHINING .....518 >REINSTALLED EVERY THING BACK TOGETHER.....518
REPAIR REPL ALTERNATOR	10/17/2023 7:07:43 AM	>ALTERNATOR ALIGHMENT WAS OUT, REPAIRED BOTTOM SPACED AND CHANGED ITS HARDWARE TO CORRECT IT, PUT BACK EVERY THING.....518
REPAIR REPL AUTOMATIC TRANS SYSTEM	9/14/2023 2:23:32 PM	>REPLACED TRANS OIL AND FITLER, RESEALED GASKET.....518 >FIXED LEAK AT THE TRANS OIL DIPSTICK.....518
REPAIR REPL BATTERY	10/19/2023 2:50:15 PM	Battery charges....1001
REPAIR REPL BATTERY	10/23/2023 9:20:46 AM	1 battery
REPAIR REPL CAB	7/14/2023 8:01:30 AM	>REMOVED CAB FLOOR FOR REPAIRS
REPAIR REPL CAB	7/19/2023 2:32:59 PM	remove seized piano hinges from engine side covers .sandblast and paint....697
REPAIR REPL CAB	7/26/2023 10:12:42 AM	remove exhaust connection. clean and prep broken manifold flange. tack and weld broken flange....697
REPAIR REPL CAB	7/26/2023 10:16:44 AM	drill and ream exhaust flange holes for key certs...697
REPAIR REPL CAB	7/26/2023 12:16:43 PM	remove gauges from mounting bracket. sand blast and paint....697



REPAIR REPL COUNTER WEIGHT	7/14/2023 8:01:30 AM	>REMOVED LED COUNTER WEIGHT SO FLOOR CAN BE REPAIRED
REPAIR REPL COUNTER WEIGHT	10/17/2023 7:07:43 AM	>INSTALLED BOTH SIDE COUNTER WEIGHTS .....518
REPAIR REPL ELECTRICAL ACC SYSTEM	10/17/2023 9:12:34 AM	>INSTALLED RADIO 8 GAUGE SUPPLY WIRES TO THE AUX BATTERY.....518 >INSTALLED INVERTOR AND ITS WIRING.....518 >INSTALLED AUX BATTERY CHARGER AND RAN BATTERY CABLES .....518
REPAIR REPL GAUGES SYSTEM	10/17/2023 7:07:43 AM	>INSTALLED ALL DASH GAUGES AND WIRING, INSTALLED GAUGES SENDING UNITS.....518 >INSTALLED DASH LIGHT WIRING AND FUSE HOLDER ETC.....518 >
REPAIR REPL GOVERNOR	6/21/2023 11:14:54 AM	>REPLACED COMPRESSOR GOVERNOR, REPLACED IT FITTINGS ETC.....518
REPAIR REPL HEADLIGHT	9/30/2023 9:42:16 AM	>REPLACED SEALED HEAD LIGHT TO REPLACABLE BULB TYPE .....518 >REPLACED HEAD LIGHT BULB SOCKET.....518
REPAIR REPL HORN AIR	7/13/2023 2:49:27 PM	>REMOVED WISTLE BRACKET AND GAVE IT TO FAB SHOP FOR REPAIR.....518 >REMOVED WISTLE VALVE AND SEAT WAS DAMAGED, NEEDS TO BE REPAIRED BY MACHINE SHOP..518
REPAIR REPL HORN AIR	7/17/2023 11:26:57 AM	>REPLACED WISTLE FITTINGS ETC AND MOUNTTED TO BRACKET AND INSTALLED IT BACK IN.....518
REPAIR REPL HORN AIR	9/27/2023 7:26:23 AM	>INSTALLED WISTLE VALVE AND COVER ETC.....518 >RAN NEW HOSE TO THE WISTLE.....518
REPAIR REPL HOSE	9/14/2023 2:23:32 PM	>REPLACED ALL THE ENGINE COOLANT HOSES.....518 >REPLACED TRANS OIL COOLER HOSES.....518
REPAIR REPL HOSE'S	9/14/2023 2:37:52 PM	>REPLACED ALL THE FUEL LINES AND FITTINGS, CHANGED ITS ORIANATATION SO ITS AWAY FROM EXHAUST ETC, CHANGED FUEL SHUT OFF LOCATION .....518
REPAIR REPL IGNITION SWITCH	10/17/2023 9:14:04 AM	>WIRED NEW IGNITION SWITCH.....518
REPAIR REPL IGNITION SYSTEM	9/14/2023 2:08:55 PM	>REPLACED IGNITION COIL CAP AND ROTORS.....518
REPAIR REPL IGNITION SYSTEM	9/14/2023 2:39:02 PM	>SET INTAKE AND EXHUST VALVES.....518
REPAIR REPL IGNITION SYSTEM	10/17/2023 7:00:26 AM	>RAN ENGINE AND ADJUSTED IGNITION TIMING .....518
REPAIR REPL LINKAGES/CABLES	10/10/2023 10:06:27 AM	REPLACE CARBORATOR CHOCK CABLE
REPAIR REPL MAIN ENGINE SYSTEM	9/14/2023 2:18:08 PM	>CHECK CRANK END PLAY AND FOUND ITS AT 0.025" AND SPEC IS 0.003"-0.011" MAX. THEREFORE ENGINE MAIN BEARING NEEDS TO REPLACED.....POO.....518 >REMOVED ENGINE OIL PAN AND REMOVED ONE MAIN BEARING.....518
REPAIR REPL MAIN ENGINE SYSTEM	9/19/2023 2:49:44 PM	>REPLACED ALL MAIN BEARINGS AND CRANK THRUST BEARINGS.....518 >REPLACED CRANK REAR MAIN SEAL.....518 >RESEALED OIL PAN GASKET.....518
REPAIR REPL MAIN ENGINE SYSTEM	9/21/2023 12:07:44 PM	>REPLACED VALVE COVER GASKET.....518
REPAIR REPL MANIFOLD	7/14/2023 7:59:38 AM	>EXHAUST MANIFOLD FLANGE MISSING ONE SIDE EAR, NEEDS TO REPAIRED
REPAIR REPL MANIFOLD	10/17/2023 7:07:43 AM	>NOTICED EXHAUST LEAK FROM NEW CLAMP, HEATED CLAMPING AREA AND RE-TIGHTENED CLAMPS..518
REPAIR REPL MISC BRACKETS	7/11/2023 12:25:42 PM	fab. repairs for green train

REPAIR REPL MISC BRACKETS	7/11/2023 12:57:54 PM	modify whistler bracket ....697
REPAIR REPL MISC BRACKETS	7/12/2023 9:54:36 AM	fabricate air line bracket and mount...697
REPAIR REPL MISC BRACKETS	7/12/2023 10:58:01 AM	clean ,sand blast and paint drive shaft cover....697
REPAIR REPL MISC BRACKETS	7/12/2023 2:24:04 PM	remove floor panels ....697 sand blast and paint....697 stick on grip tread to floor panels and drive shaft cover.....697
REPAIR REPL MISC BRACKETS	7/17/2023 2:04:19 PM	remove inner floor plates . lay out and cut new ones. install and drill mounting holes and bolt. remove plates and paint....697
REPAIR REPL MISC BRACKETS	7/18/2023 11:15:47 AM	remove broken piano hinge on rear cover . drill and rivet new piano hinge to rear cover....697
REPAIR REPL MISC BRACKETS	7/18/2023 1:55:12 PM	fabricate new seat bracket...697
REPAIR REPL MISC BRACKETS	7/19/2023 9:39:26 AM	take apart train whistle and make new leather washer and reassemble....697 remove whistle air pipes and sandblast and paint...697
REPAIR REPL MISC BRACKETS	9/14/2023 2:49:36 PM	T fitting for coolant had to be fabricated because old one to far gone , could not weld repair.....689 90 Degree coolant elbow had to be cut apart and weld repaired ( copper removed and replaced with steel ) ...689 Help mechanic remove black steel elbows and pipe from exhaust ...689 finish repair to exhaust manifold ( holes on flange for bolting on pipe where half done)....689 figure out how Black steel pipe exhaust will bolt up to conventional exhaust to add flex pipe, fabricate, paint and install...689 clean and remove rust on outer frame to cut holes for electrical then paint repaired area...689 remove exhaust front hanger and broken bolt...689 make up new front exhaust hangers....689
REPAIR REPL MISC BRACKETS	9/21/2023 7:27:34 AM	shim exhaust at air tank and add new clamp...689 modify 2 new front exhaust clamps and install with new clamp...689 modify 2 bolts that hold down the smoke stack to fit the exhaust hangers...689 remove stripped welded nuts and bolts at front side of exhaust stack and replaced...689 removed 2 mismatched and stripped 1/4 bolts/nuts that hold the front (gold ) bar supports, replaced with rivnuts and acorn nuts...689 relocated night switch and welded cleaned and primed hole on body....689 welded in new ground stud in compressor bay...689 fabricated 4 wire support bars and welded in outer frame....689 weld in new ground stud in engine bay...689
REPAIR REPL MISC BRACKETS	9/28/2023 12:39:04 PM	Fabricated mounting bracket for wiring harness along valve cover...689 modified fuel filter bracket and painted....689 cleaned and painted inside of outer rails for new wire loom runs.....689 fabricated intake tube and painted....689 weld on ground stud (left side engine bay)....689
REPAIR REPL MISC BRACKETS	9/29/2023 1:17:51 PM	Fabricated overhead bracket for battery charger....672
REPAIR REPL MISC BRACKETS	10/26/2023 7:44:27 AM	Fabricate and install debris blocker at top of smoke stack...689 Weld in 4 studs for main gauge pod mounting....689 Fabricate and install stainless bezel for electrical switch panel...689 Help mechanic set engine timing (tack positioner at Top Dead center)....689 Fabricate drive shaft cover and install.....689

		repair grip tape and touch up paint.....689 Repair speaker and fabricate new mounting brackets/ install....689 Install front main panel (gauge/electrical/engine cover)....689 Refit old engine side covers and install.....689
REPAIR REPL PIPE	7/14/2023 7:59:38 AM	>REPAIR EXHAUST PIPE AND CLAMPS
REPAIR REPL PIPE	9/27/2023 2:45:29 PM	>INSTALLED INTAKE PIPES.....518 >INSTALLED FITTING FOR CRANK CASE VENTILATION AND HOSED BACK INTO THE INTAKE.....518
REPAIR REPL POWERTRAIN	6/28/2023 2:35:34 PM	>DISCONNECTED DRIVE LINES AIR AIR SUPPLY ETC RAISED LOCOMOTIVE AND REMOVED FRONT AND REAR BOGIES, REMOVED DUMMY WHEEL ASSEMBLY .....518 >CHARGED AIR TANKS AND DIAGNOSED AIR LEAKS, FOUND MULTIPLE HOSES AND FITTING LEAKING.....518
REPAIR REPL POWERTRAIN	10/17/2023 7:00:26 AM	>READJUSTED ACCESSORY DRIVE LINE AND TORQUED ALL THE SET SCREWS .....518 >INSTALLED ALL THE AIR LINES TOGETHER BATTERY ETC .....518
REPAIR REPL RADIATOR	7/14/2023 7:59:37 AM	>REPLACE RADIATOR DUE TO LEAK, SEE PICTURES FOR MORE DETAILS
REPAIR REPL RADIATOR	7/14/2023 8:00:04 AM	>REMOVED RADIATOR AND SEND IT OUT FOR REPAIR
REPAIR REPL RADIATOR	9/14/2023 2:40:00 PM	>INSTALLED RADIATOR AND ENGINE FAN.....518
REPAIR REPL RADIO AM/FM	10/30/2023 7:03:35 AM	INSTALLED RADIO AND ITS SUPPLY WIRES ETC, .....518
REPAIR REPL SAFETY EQUIPMENT	10/23/2023 10:22:49 AM	>DRILL HOLES AND INSTALLED FIRE EXTINGUISHER BRACKET.....518
REPAIR REPL SYSTEM	6/12/2023 3:34:20 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.
REPAIR REPL TANK	9/14/2023 2:35:25 PM	>REPLACED FUEL TANK BRASS SUPPLY FITTINGS.....518
REPAIR REPL THERMOSTAT	9/14/2023 2:23:32 PM	>REPLACED ENGINE THERMOSTAT, MADE NEW GASKETS .....518
REPAIR REPL THREADING	7/5/2023 7:53:58 AM	Machine new threaded rod for train horn as requested.
REPAIR REPL TIMING GEAR	10/17/2023 9:14:04 AM	>ADJUSTED DISTRIBUTOR TIMING TO FACTORY SPEC IT WAS OUT BY 8 DEG.....518
REPAIR REPL VALVES	6/21/2023 11:13:22 AM	>CHANGED RELAY VALVE ORIENTATION AND REMOUNTED VALVE.....518
REPAIR REPL VALVES	7/13/2023 2:49:27 PM	>
REPAIR REPL VALVES	7/17/2023 11:23:40 AM	>REPLACED BALL VALVE AND ITS FITTINGS ETC FOR TO CHARGER AIR TANKS.....518 >INSTALLED BALL VALVE HOLD DOWN BRACKET.....518
REPAIR REPL WIRING HARNESS	9/14/2023 2:08:55 PM	>REMOVED ENGINE WIRING HARNESS >REMOVED GAUGES WIRING HARNESS >REMOVED AUX BATTERY WIRING HARNESS >REMOVED COMPLETE CHASSIS WIRING HARNESS
REPAIR REPL WIRING HARNESS	9/14/2023 2:48:15 PM	>SEARCHED ONLINE FOR ENG OIL PRESS, COOLANT TEMP, CHARGING AND HOUR METER GAGES AND ORDERED THEM.....518
REPAIR REPL WIRING HARNESS	9/18/2023 7:06:30 AM	>REPLACED BATTERY ISOLATOR .....518 >REPLACED STARTER SOLENOID.....518
REPAIR REPL WIRING HARNESS	9/21/2023 12:07:44 PM	>START MAKING BATTERY CABLE TO KINGHT SWITCH AND STARTER SOLENOID AND BATTERY ISOLATOR.518
REPAIR REPL WIRING HARNESS	9/27/2023 7:28:13 AM	>INSTALLED NEW TEMP SENDING UNIT FOR THE GAUGE.....518 >INSTALLED IGNITION WIRING FOR THE MAIN HARNESS.....518
TRANSPORT COMPLETE UNIT	6/15/2023 9:15:59 AM	TRANSPORT FROM STANLEY PARK TO MANHEQ

TRANSPORT COMPLETE UNIT	10/26/2023 8:43:26 AM	TRANSPORT FROM MANHEQ TO STANLEY PARK
TRAVEL TIME AIR SUPPLY SYSTEM	6/21/2023 11:14:54 AM	>WENT TO GREEN TO GET HOSE MADE UP FOR AIR COMPRESSOR .....518
WELD MISC PLATE	7/14/2023 9:21:56 AM	weld 1/8 plate over pit

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	6/19/2023 7:07:36 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	4.36	\$597.66	6/19/2023 2:56:41 PM
	6/19/2023 7:07:36 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	4.96	\$679.86	6/19/2023 12:05:25 PM
	6/19/2023 7:07:36 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(4.96)	(\$679.86)	6/19/2023 2:56:42 PM
	6/19/2023 12:01:34 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.95	\$404.76	6/19/2023 2:56:41 PM
	6/19/2023 12:05:34 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.84	\$388.78	6/19/2023 2:55:52 PM
	6/19/2023 12:05:34 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(2.84)	(\$388.78)	6/19/2023 2:56:42 PM
	6/20/2023 7:11:26 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(5.95)	(\$814.58)	6/20/2023 1:11:54 PM
	6/20/2023 7:11:26 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	3.00	\$411.00	6/20/2023 1:11:53 PM
	6/20/2023 7:11:26 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	5.95	\$814.58	6/20/2023 1:08:13 PM
	6/20/2023 10:11:26 AM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	1.98	\$270.73	6/20/2023 1:11:15 PM
	6/20/2023 12:39:46 PM	03-051-LS0	REPAIR REPL AIR LINE	2.29	\$313.73	6/20/2023 2:57:40 PM
	6/20/2023 12:39:46 PM	03-051-LS0	REPAIR REPL AIR LINE	(2.29)	(\$313.73)	6/20/2023 2:57:55 PM
	6/20/2023 12:39:46 PM	03-051-LS0	REPAIR REPL AIR LINE	2.32	\$318.30	6/20/2023 2:57:55 PM
	6/20/2023 1:09:46 PM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	0.00	\$0.53	6/20/2023 1:10:02 PM
	6/20/2023 1:09:46 PM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	0.00	(\$0.53)	6/20/2023 1:11:16 PM
	6/20/2023 1:10:00 PM	03-051-LS0	REPAIR REPL AIR LINE	1.79	\$244.70	6/20/2023 2:57:12 PM
	6/20/2023 1:10:00 PM	03-051-LS0	REPAIR REPL AIR LINE	(1.79)	(\$244.70)	6/20/2023 2:57:40 PM
	6/21/2023 6:34:32 AM	03-051-LS0	REPAIR REPL AIR LINE	3.46	\$474.40	6/21/2023 2:46:46 PM
	6/21/2023 6:34:32 AM	03-051-LS0	REPAIR REPL AIR LINE	(3.46)	(\$474.40)	6/21/2023 2:46:57 PM
	6/21/2023 6:34:32 AM	03-051-LS0	REPAIR REPL AIR LINE	4.51	\$618.25	6/21/2023 11:05:20 AM
	6/21/2023 6:34:32 AM	03-051-LS0	REPAIR REPL AIR LINE	(4.51)	(\$618.25)	6/21/2023 2:46:46 PM
	6/21/2023 6:44:32 AM	03-051-LS0	REPAIR REPL AIR LINE	3.30	\$451.57	6/21/2023 2:46:56 PM
	6/21/2023 10:02:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	1.45	\$199.26	6/21/2023 2:46:45 PM
	6/21/2023 10:25:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	1.07	\$146.74	6/21/2023 2:45:50 PM
	6/21/2023 10:25:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	(1.07)	(\$146.74)	6/21/2023 2:46:46 PM
	6/21/2023 11:05:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	0.40	\$55.41	6/21/2023 2:44:47 PM
	6/21/2023 11:05:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	(0.40)	(\$55.41)	6/21/2023 2:45:50 PM

s.22(1)

6/21/2023 11:05:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	3.63	\$497.42	6/21/2023 2:43:12 PM
6/21/2023 11:05:18 AM	03-051-GN0	REPAIR REPL GOVERNOR	(3.63)	(\$497.42)	6/21/2023 2:44:47 PM
6/21/2023 12:01:09 PM	03-051-LS0	REPAIR REPL AIR LINE	2.97	\$407.38	6/21/2023 2:46:45 PM
6/21/2023 2:43:09 PM	03-051-LS0	REPAIR REPL AIR LINE	0.01	\$0.95	6/21/2023 2:43:36 PM
6/21/2023 2:43:09 PM	03-051-LS0	REPAIR REPL AIR LINE	(0.01)	(\$0.95)	6/21/2023 2:46:46 PM
6/22/2023 7:09:23 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	4.39	\$601.43	6/22/2023 2:54:32 PM
6/22/2023 7:09:23 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	7.72	\$1,058.10	6/22/2023 2:52:58 PM
6/22/2023 7:09:23 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(7.72)	(\$1,058.10)	6/22/2023 2:54:32 PM
6/22/2023 12:03:10 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.94	\$402.44	6/22/2023 2:54:31 PM
6/22/2023 2:53:10 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	0.00	\$0.57	6/22/2023 2:53:27 PM
6/22/2023 2:53:10 PM	14-051-000	INSTALL AIR SUPPLY SYSTEM	0.00	(\$0.57)	6/22/2023 2:54:32 PM
6/23/2023 6:33:40 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	0.58	\$79.99	6/23/2023 7:08:45 AM
6/23/2023 6:33:40 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(0.58)	(\$79.99)	6/23/2023 12:22:35 PM
6/26/2023 6:40:27 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	1.11	\$152.64	6/26/2023 7:47:18 AM
6/26/2023 6:40:27 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(1.11)	(\$152.64)	6/27/2023 11:24:07 AM
6/28/2023 6:42:17 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.43	\$333.02	6/28/2023 12:09:25 PM
6/28/2023 7:02:17 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.10	\$287.36	6/28/2023 9:08:10 AM
6/28/2023 7:02:17 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(2.10)	(\$287.36)	6/28/2023 12:09:25 PM
6/28/2023 9:08:08 AM	03-028	REPAIR REPL POWERTRAIN	2.34	\$320.09	6/28/2023 11:28:21 AM
6/28/2023 12:00:17 PM	03-028	REPAIR REPL POWERTRAIN	2.99	\$409.74	6/28/2023 2:36:09 PM
6/28/2023 12:08:17 PM	03-028	REPAIR REPL POWERTRAIN	2.46	\$336.68	6/28/2023 2:35:46 PM
6/28/2023 12:08:17 PM	03-028	REPAIR REPL POWERTRAIN	(2.46)	(\$336.68)	6/28/2023 2:36:10 PM
6/29/2023 7:24:39 AM	03-028	REPAIR REPL POWERTRAIN	3.02	\$413.74	6/29/2023 10:25:53 AM
6/29/2023 7:30:00 AM	01-014-CT0	CAL ADJUST COUNTER WEIGHT	1.00	\$137.00	6/29/2023 12:08:14 PM
6/29/2023 10:25:51 AM	03-054-HP1	REPAIR REPL HORN AIR	1.07	\$146.74	6/29/2023 12:11:06 PM
6/29/2023 10:25:51 AM	03-054-HP1	REPAIR REPL HORN AIR	1.74	\$238.08	6/29/2023 12:10:26 PM
6/29/2023 10:25:51 AM	03-054-HP1	REPAIR REPL HORN AIR	(1.74)	(\$238.08)	6/29/2023 12:11:07 PM
6/29/2023 12:00:00 PM	03-054-HP1	REPAIR REPL HORN AIR	3.00	\$411.00	6/30/2023 7:40:58 AM
6/29/2023 12:10:33 PM	03-054-HP1	REPAIR REPL HORN AIR	2.73	\$373.67	6/29/2023 2:54:14 PM
6/29/2023 12:10:33 PM	03-054-HP1	REPAIR REPL HORN AIR	(2.73)	(\$373.67)	6/30/2023 7:37:59 AM
6/29/2023 12:10:33 PM	03-054-HP1	REPAIR REPL HORN AIR	2.82	\$386.91	6/30/2023 7:37:59 AM
6/29/2023 12:10:33 PM	03-054-HP1	REPAIR REPL HORN AIR	(2.82)	(\$386.91)	6/30/2023 7:40:59 AM
6/30/2023 9:10:34 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	(2.03)	(\$277.65)	6/30/2023 11:28:19 AM
6/30/2023 9:10:34 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	1.36	\$186.32	6/30/2023 11:28:18 AM

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	6/30/2023 9:10:34 AM	14-051-000	INSTALL AIR SUPPLY SYSTEM	2.03	\$277.65	6/30/2023 11:12:12 AM
	7/4/2023 7:24:46 AM	03-051-LS0	REPAIR REPL AIR LINE	(0.65)	(\$89.28)	7/4/2023 1:52:23 PM
	7/4/2023 7:24:46 AM	03-051-LS0	REPAIR REPL AIR LINE	1.10	\$150.93	7/4/2023 1:52:22 PM
	7/4/2023 7:24:46 AM	03-051-LS0	REPAIR REPL AIR LINE	1.25	\$171.48	7/4/2023 8:39:55 AM
	7/4/2023 7:24:46 AM	03-051-LS0	REPAIR REPL AIR LINE	(1.25)	(\$171.48)	7/4/2023 1:51:53 PM
	7/4/2023 7:24:46 AM	03-051-LS0	REPAIR REPL AIR LINE	0.65	\$89.28	7/4/2023 1:51:53 PM
	7/4/2023 1:05:49 PM	03-051-LS0	REPAIR REPL AIR LINE	1.85	\$253.91	7/4/2023 2:47:24 PM
	7/4/2023 1:05:49 PM	03-051-LS0	REPAIR REPL AIR LINE	(1.85)	(\$253.91)	7/5/2023 6:40:28 AM
	7/4/2023 1:05:49 PM	03-051-LS0	REPAIR REPL AIR LINE	1.69	\$231.07	7/4/2023 2:47:03 PM
	7/4/2023 1:05:49 PM	03-051-LS0	REPAIR REPL AIR LINE	(1.69)	(\$231.07)	7/4/2023 2:47:24 PM
	7/4/2023 1:05:49 PM	03-051-LS0	REPAIR REPL AIR LINE	1.90	\$260.72	7/5/2023 6:40:28 AM
	7/5/2023 6:55:44 AM	03-MCH-060	REPAIR REPL THREADING	0.97	\$133.27	7/5/2023 7:54:08 AM
	7/5/2023 7:10:35 AM	03-051-LS0	REPAIR REPL AIR LINE	3.86	\$529.35	7/5/2023 11:02:27 AM
	7/5/2023 7:10:35 AM	03-051-LS0	REPAIR REPL AIR LINE	(3.86)	(\$529.35)	7/5/2023 11:03:54 AM
	7/5/2023 7:10:35 AM	03-051-LS0	REPAIR REPL AIR LINE	1.70	\$232.52	7/5/2023 11:03:54 AM
	7/5/2023 10:02:00 AM	03-054-HP1	REPAIR REPL HORN AIR	1.46	\$199.53	7/6/2023 9:21:45 AM
	7/5/2023 11:02:57 AM	03-054-HP1	REPAIR REPL HORN AIR	0.37	\$51.22	7/5/2023 11:25:25 AM
	7/5/2023 11:02:57 AM	03-054-HP1	REPAIR REPL HORN AIR	(0.37)	(\$51.22)	7/5/2023 12:11:13 PM
	7/5/2023 11:02:57 AM	03-054-HP1	REPAIR REPL HORN AIR	0.44	\$60.36	7/5/2023 12:11:13 PM
	7/5/2023 11:02:57 AM	03-054-HP1	REPAIR REPL HORN AIR	(0.44)	(\$60.36)	7/6/2023 9:21:45 AM
	7/5/2023 11:59:00 AM	03-051-LS0	REPAIR REPL AIR LINE	2.01	\$275.60	7/6/2023 9:20:58 AM
	7/5/2023 12:00:29 PM	03-051-LS0	REPAIR REPL AIR LINE	1.99	\$272.21	7/5/2023 2:41:42 PM
	7/5/2023 12:00:29 PM	03-051-LS0	REPAIR REPL AIR LINE	(1.99)	(\$272.21)	7/6/2023 9:20:59 AM
	7/5/2023 12:10:29 PM	03-051-LS0	REPAIR REPL AIR LINE	2.49	\$340.71	7/5/2023 2:39:44 PM
	7/5/2023 12:10:29 PM	03-051-LS0	REPAIR REPL AIR LINE	(2.49)	(\$340.71)	7/5/2023 2:41:42 PM
	7/5/2023 1:59:26 PM	02-000	CLEAN UNIT SERVICES	1.00	\$137.57	7/5/2023 2:41:42 PM
	7/5/2023 1:59:26 PM	02-000	CLEAN UNIT SERVICES	(1.00)	(\$137.57)	7/6/2023 9:20:59 AM
	7/5/2023 1:59:26 PM	02-000	CLEAN UNIT SERVICES	1.01	\$138.29	7/6/2023 9:20:58 AM
	7/5/2023 2:40:26 PM	02-000	CLEAN UNIT SERVICES	0.00	\$0.57	7/5/2023 2:40:50 PM
	7/5/2023 2:40:26 PM	02-000	CLEAN UNIT SERVICES	0.00	(\$0.57)	7/5/2023 2:41:42 PM
	7/7/2023 9:47:40 AM	14-CAR-X48	INSTALL CONSTRUCTION	1.70	\$232.56	7/7/2023 11:29:33 AM
	7/7/2023 12:04:19 PM	14-CAR-X48	INSTALL CONSTRUCTION	2.88	\$394.67	7/7/2023 2:57:11 PM
	7/10/2023 6:41:34 AM	03-051-LS0	REPAIR REPL AIR LINE	(0.50)	(\$68.08)	7/10/2023 10:53:51 AM
	7/10/2023 6:41:34 AM	03-051-LS0	REPAIR REPL AIR LINE	0.50	\$68.08	7/10/2023 7:11:46 AM

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	7/10/2023 7:01:34 AM	03-051-LS0	REPAIR REPL AIR LINE	0.16	\$22.41	7/10/2023 7:11:28 AM
	7/10/2023 7:01:34 AM	03-051-LS0	REPAIR REPL AIR LINE	(0.16)	(\$22.41)	7/10/2023 7:11:47 AM
	7/11/2023 6:29:57 AM	14-CAR-X48	INSTALL CONSTRUCTION	5.01	\$685.99	7/11/2023 11:30:26 AM
	7/11/2023 12:04:32 PM	14-CAR-X48	INSTALL CONSTRUCTION	2.89	\$396.31	7/11/2023 2:58:06 PM
	7/11/2023 12:26:14 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.48	\$340.14	7/11/2023 2:55:12 PM
	7/11/2023 1:49:58 PM	03-051-V11	REPAIR REPL VALVES	1.16	\$159.38	7/11/2023 2:56:05 PM
	7/11/2023 1:49:58 PM	03-051-V11	REPAIR REPL VALVES	1.10	\$150.24	7/11/2023 2:55:49 PM
	7/11/2023 1:49:58 PM	03-051-V11	REPAIR REPL VALVES	(1.10)	(\$150.24)	7/11/2023 2:56:05 PM
	7/12/2023 6:23:42 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.04	\$690.56	7/12/2023 11:26:08 AM
	7/12/2023 12:02:55 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.88	\$394.03	7/12/2023 2:55:29 PM
	7/13/2023 6:41:05 AM	03-002	REPAIR REPL CAB	2.63	\$360.31	7/13/2023 12:09:17 PM
	7/13/2023 7:21:05 AM	03-002	REPAIR REPL CAB	1.96	\$268.98	7/13/2023 9:18:55 AM
	7/13/2023 7:21:05 AM	03-002	REPAIR REPL CAB	(1.96)	(\$268.98)	7/13/2023 12:09:17 PM
	7/13/2023 9:18:53 AM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	2.80	\$382.95	7/13/2023 12:06:38 PM
	7/13/2023 9:18:53 AM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	(2.80)	(\$382.95)	7/13/2023 12:08:41 PM
	7/13/2023 9:18:53 AM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	2.18	\$298.47	7/13/2023 12:08:40 PM
	7/13/2023 12:00:32 PM	03-042-R60	REPAIR REPL RADIATOR	2.99	\$409.33	7/13/2023 2:50:13 PM
	7/13/2023 12:07:32 PM	03-042-R60	REPAIR REPL RADIATOR	2.70	\$370.51	7/13/2023 2:49:50 PM
	7/13/2023 12:07:32 PM	03-042-R60	REPAIR REPL RADIATOR	(2.70)	(\$370.51)	7/13/2023 2:50:13 PM
	7/13/2023 12:19:06 PM	03-042-R60	REPAIR REPL RADIATOR	2.69	\$369.10	7/13/2023 3:00:54 PM
	7/14/2023 6:41:16 AM	03-042-R60	REPAIR REPL RADIATOR	(5.58)	(\$764.04)	7/14/2023 12:21:51 PM
	7/14/2023 6:41:16 AM	03-042-R60	REPAIR REPL RADIATOR	5.58	\$764.04	7/14/2023 12:15:55 PM
	7/14/2023 6:41:16 AM	03-044-T60	REPAIR REPL TANK	1.33	\$182.67	7/14/2023 12:21:50 PM
	7/14/2023 8:01:16 AM	03-042-R60	REPAIR REPL RADIATOR	4.24	\$581.37	7/14/2023 12:21:51 PM
	7/14/2023 8:01:16 AM	03-042-R60	REPAIR REPL RADIATOR	(4.24)	(\$581.37)	7/14/2023 2:45:13 PM
	7/14/2023 8:01:16 AM	03-042-R60	REPAIR REPL RADIATOR	1.24	\$170.37	7/14/2023 2:45:12 PM
	7/14/2023 9:16:26 AM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	2.49	\$341.24	7/14/2023 2:45:12 PM
	7/14/2023 9:22:09 AM	EH-010-MH0	WELD MISC PLATE	2.12	\$290.55	7/14/2023 11:29:25 AM
	7/14/2023 9:25:07 AM	14-CAR-X48	INSTALL CONSTRUCTION	2.12	\$291.01	7/14/2023 11:32:35 AM
	7/14/2023 12:00:50 PM	EH-010-MH0	WELD MISC PLATE	2.22	\$304.79	7/14/2023 2:14:21 PM
	7/14/2023 12:16:26 PM	03-042-H52	REPAIR REPL HOSE'S	2.72	\$372.18	7/14/2023 2:45:52 PM
	7/14/2023 12:16:26 PM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	0.02	\$2.63	7/14/2023 12:17:46 PM
	7/14/2023 12:16:26 PM	95-051-000	TRAVEL TIME AIR SUPPLY SYSTEM	(0.02)	(\$2.63)	7/14/2023 2:45:13 PM
	7/14/2023 12:17:35 PM	03-042-H52	REPAIR REPL HOSE'S	2.41	\$330.74	7/14/2023 2:42:28 PM

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7/14/2023 12:17:35 PM	03-042-H52	REPAIR REPL HOSE'S	(2.41)	(\$330.74)	7/14/2023 2:45:13 PM
7/14/2023 12:17:35 PM	03-042-H52	REPAIR REPL HOSE'S	2.70	\$369.56	7/14/2023 2:45:13 PM
7/14/2023 12:17:35 PM	03-042-H52	REPAIR REPL HOSE'S	(2.70)	(\$369.56)	7/14/2023 2:45:53 PM
7/17/2023 6:35:54 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.90	\$670.96	7/17/2023 11:29:45 AM
7/17/2023 6:45:32 AM	03-002	REPAIR REPL CAB	0.61	\$83.76	7/17/2023 2:50:11 PM
7/17/2023 7:05:32 AM	03-002	REPAIR REPL CAB	0.28	\$38.09	7/17/2023 7:22:15 AM
7/17/2023 7:05:32 AM	03-002	REPAIR REPL CAB	(0.28)	(\$38.09)	7/17/2023 2:50:11 PM
7/17/2023 12:00:00 PM	14-CAR-X48	INSTALL CONSTRUCTION	1.01	\$137.91	7/20/2023 8:05:52 AM
7/17/2023 12:04:18 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.85	\$390.15	7/17/2023 2:55:11 PM
7/17/2023 12:29:51 PM	14-CAR-X48	INSTALL CONSTRUCTION	(0.51)	(\$69.76)	7/20/2023 8:05:53 AM
7/17/2023 12:29:51 PM	14-CAR-X48	INSTALL CONSTRUCTION	0.51	\$69.76	7/17/2023 1:00:27 PM
7/18/2023 6:26:26 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.06	\$693.11	7/18/2023 11:29:59 AM
7/18/2023 12:01:07 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.94	\$403.39	7/18/2023 2:57:47 PM
7/19/2023 6:24:40 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.11	\$700.34	7/19/2023 11:31:24 AM
7/19/2023 6:24:40 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(5.11)	(\$700.34)	7/20/2023 6:36:05 AM
7/19/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.02	\$688.16	7/20/2023 6:36:05 AM
7/19/2023 9:38:05 AM	14-CAR-X48	INSTALL CONSTRUCTION	1.33	\$181.56	7/19/2023 10:57:42 AM
7/19/2023 12:02:59 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.24	\$307.45	7/19/2023 2:17:51 PM
7/19/2023 1:47:19 PM	14-CAR-X48	INSTALL CONSTRUCTION	1.17	\$160.21	7/19/2023 2:57:29 PM
7/19/2023 2:17:38 PM	03-002	REPAIR REPL CAB	0.71	\$96.74	7/20/2023 6:36:05 AM
7/19/2023 2:17:38 PM	03-002	REPAIR REPL CAB	0.62	\$85.21	7/19/2023 2:54:58 PM
7/19/2023 2:17:38 PM	03-002	REPAIR REPL CAB	(0.62)	(\$85.21)	7/20/2023 6:36:05 AM
7/20/2023 6:27:14 AM	03-002	REPAIR REPL CAB	8.46	\$1,159.44	7/20/2023 2:55:02 PM
7/20/2023 6:27:14 AM	03-002	REPAIR REPL CAB	(8.46)	(\$1,159.44)	7/21/2023 9:10:11 AM
7/20/2023 6:30:00 AM	03-002	REPAIR REPL CAB	8.00	\$1,096.00	7/21/2023 9:10:10 AM
7/20/2023 6:30:00 AM	14-CAR-X48	INSTALL CONSTRUCTION	1.00	\$136.39	7/20/2023 7:29:44 AM
7/21/2023 6:27:42 AM	03-002	REPAIR REPL CAB	(0.19)	(\$25.69)	7/24/2023 6:26:44 AM
7/21/2023 6:27:42 AM	03-002	REPAIR REPL CAB	0.19	\$25.69	7/21/2023 6:38:59 AM
7/21/2023 6:30:00 AM	03-002	REPAIR REPL CAB	0.15	\$20.44	7/24/2023 6:26:43 AM
7/25/2023 6:40:21 AM	03-002	REPAIR REPL CAB	8.25	\$1,129.57	7/25/2023 2:55:03 PM
7/25/2023 6:40:21 AM	03-002	REPAIR REPL CAB	(8.25)	(\$1,129.57)	7/26/2023 6:33:56 AM
7/25/2023 6:40:21 AM	03-002	REPAIR REPL CAB	8.33	\$1,140.87	7/26/2023 6:33:55 AM
7/26/2023 6:33:42 AM	03-002	REPAIR REPL CAB	4.89	\$669.82	7/26/2023 11:27:03 AM
7/26/2023 12:04:36 PM	03-002	REPAIR REPL CAB	1.09	\$148.68	7/26/2023 1:09:45 PM



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7/27/2023 12:41:39 PM	EH-010-MH0	WELD MISC PLATE	2.29	\$313.27	7/27/2023 2:59:22 PM
7/27/2023 12:47:25 PM	14-CAR-X48	INSTALL CONSTRUCTION	2.17	\$296.61	7/27/2023 2:57:19 PM
7/28/2023 6:27:48 AM	14-CAR-X48	INSTALL CONSTRUCTION	2.57	\$351.94	7/28/2023 9:01:57 AM
7/28/2023 6:27:48 AM	14-CAR-X48	INSTALL CONSTRUCTION	(2.57)	(\$351.94)	7/28/2023 9:31:26 AM
7/28/2023 6:27:48 AM	14-CAR-X48	INSTALL CONSTRUCTION	1.80	\$246.90	7/28/2023 9:31:25 AM
7/28/2023 6:28:27 AM	EH-010-MH0	WELD MISC PLATE	0.13	\$17.62	7/28/2023 6:36:12 AM
7/28/2023 7:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	2.54	\$347.75	8/1/2023 6:13:03 AM
7/28/2023 8:09:56 AM	EH-010-MH0	WELD MISC PLATE	1.68	\$230.58	7/28/2023 9:50:57 AM
7/28/2023 10:01:26 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.01	\$1.98	7/28/2023 10:02:20 AM
7/28/2023 10:01:26 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(0.01)	(\$1.98)	8/1/2023 6:13:03 AM
7/28/2023 12:49:31 PM	03-002	REPAIR REPL CAB	0.00	\$0.57	7/28/2023 12:49:47 PM
7/28/2023 12:49:31 PM	03-002	REPAIR REPL CAB	0.00	(\$0.57)	7/28/2023 12:50:28 PM
8/1/2023 8:31:10 AM	14-CAR-X48	INSTALL CONSTRUCTION	1.21	\$166.42	8/1/2023 9:45:30 AM
8/1/2023 12:04:50 PM	14-CAR-X48	INSTALL CONSTRUCTION	0.13	\$17.58	8/1/2023 12:12:33 PM
8/1/2023 1:49:14 PM	14-CAR-X48	INSTALL CONSTRUCTION	0.47	\$64.50	8/1/2023 2:17:37 PM
8/9/2023 6:48:07 AM	02-044-T60	CLEAN TANK	3.61	\$494.08	8/9/2023 12:11:03 PM
8/9/2023 7:18:07 AM	02-044-T60	CLEAN TANK	4.11	\$562.58	8/9/2023 11:24:34 AM
8/9/2023 7:18:07 AM	02-044-T60	CLEAN TANK	(4.11)	(\$562.58)	8/9/2023 12:11:03 PM
8/9/2023 10:24:30 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	1.08	\$147.77	8/9/2023 12:11:46 PM
8/9/2023 10:24:30 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	1.01	\$138.64	8/9/2023 12:11:03 PM
8/9/2023 10:24:30 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	(1.01)	(\$138.64)	8/9/2023 12:11:47 PM
8/9/2023 11:24:30 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	0.01	\$1.64	8/9/2023 11:25:15 AM
8/9/2023 11:24:30 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	(0.01)	(\$1.64)	8/9/2023 12:11:03 PM
8/9/2023 12:00:58 PM	03-033-000	REPAIR REPL IGNITION SYSTEM	2.39	\$326.90	8/9/2023 2:45:11 PM
8/9/2023 12:09:58 PM	03-033-000	REPAIR REPL IGNITION SYSTEM	2.57	\$352.01	8/9/2023 2:44:10 PM
8/9/2023 12:09:58 PM	03-033-000	REPAIR REPL IGNITION SYSTEM	(2.57)	(\$352.01)	8/9/2023 2:45:12 PM
8/10/2023 6:35:48 AM	03-033-000	REPAIR REPL IGNITION SYSTEM	1.81	\$247.97	8/10/2023 8:24:37 AM
8/10/2023 8:24:24 AM	38-PRM-B54	SERVICE 3 MONTH	3.12	\$426.83	8/10/2023 12:12:03 PM
8/10/2023 8:24:24 AM	38-PRM-B54	SERVICE 3 MONTH	3.78	\$518.16	8/10/2023 12:11:22 PM
8/10/2023 8:24:24 AM	38-PRM-B54	SERVICE 3 MONTH	(3.78)	(\$518.16)	8/10/2023 12:12:03 PM
8/10/2023 12:01:36 PM	38-PRM-B54	SERVICE 3 MONTH	2.96	\$406.17	8/10/2023 2:53:48 PM
8/10/2023 12:11:36 PM	38-PRM-B54	SERVICE 3 MONTH	2.70	\$369.63	8/10/2023 2:53:31 PM
8/10/2023 12:11:36 PM	38-PRM-B54	SERVICE 3 MONTH	(2.70)	(\$369.63)	8/10/2023 2:53:49 PM
8/11/2023 6:36:33 AM	38-PRM-B54	SERVICE 3 MONTH	0.68	\$93.39	8/11/2023 7:17:28 AM

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8/11/2023 6:36:33 AM	38-PRM-B54	SERVICE 3 MONTH	(0.68)	(\$93.39)	8/11/2023 7:18:01 AM
8/11/2023 6:46:33 AM	38-PRM-B54	SERVICE 3 MONTH	(0.52)	(\$70.56)	8/11/2023 8:41:41 AM
8/11/2023 6:46:33 AM	38-PRM-B54	SERVICE 3 MONTH	0.52	\$70.56	8/11/2023 7:18:00 AM
8/15/2023 8:35:50 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	1.48	\$203.06	8/15/2023 10:04:57 AM
8/15/2023 8:35:50 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	(1.48)	(\$203.06)	8/15/2023 11:17:48 AM
8/15/2023 8:55:50 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	1.02	\$139.13	8/15/2023 11:17:47 AM
8/21/2023 6:44:17 AM	03-043-PB0	REPAIR REPL PIPE	4.77	\$653.53	8/21/2023 2:28:27 PM
8/21/2023 7:44:17 AM	03-043-PB0	REPAIR REPL PIPE	6.20	\$849.89	8/21/2023 1:56:31 PM
8/21/2023 7:44:17 AM	03-043-PB0	REPAIR REPL PIPE	(6.20)	(\$849.89)	8/21/2023 2:28:27 PM
8/21/2023 12:00:45 PM	03-051-LS0	REPAIR REPL AIR LINE	2.98	\$408.22	8/21/2023 2:28:27 PM
8/21/2023 1:56:45 PM	03-051-LS0	REPAIR REPL AIR LINE	0.50	\$68.01	8/21/2023 2:26:33 PM
8/21/2023 1:56:45 PM	03-051-LS0	REPAIR REPL AIR LINE	(0.50)	(\$68.01)	8/21/2023 2:28:27 PM
8/22/2023 6:46:15 AM	03-043-PB0	REPAIR REPL PIPE	4.73	\$648.31	8/22/2023 2:54:33 PM
8/22/2023 6:56:15 AM	03-043-PB0	REPAIR REPL PIPE	(7.95)	(\$1,089.00)	8/22/2023 2:54:34 PM
8/22/2023 6:56:15 AM	03-043-PB0	REPAIR REPL PIPE	7.95	\$1,089.00	8/22/2023 2:53:14 PM
8/22/2023 12:00:22 PM	03-042-R60	REPAIR REPL RADIATOR	2.99	\$409.21	8/22/2023 2:54:33 PM
8/22/2023 2:53:22 PM	03-042-R60	REPAIR REPL RADIATOR	0.00	(\$0.49)	8/22/2023 2:54:34 PM
8/22/2023 2:53:22 PM	03-042-R60	REPAIR REPL RADIATOR	0.00	\$0.49	8/22/2023 2:53:38 PM
8/23/2023 6:48:08 AM	03-042-R60	REPAIR REPL RADIATOR	4.67	\$640.25	8/23/2023 12:56:51 PM
8/23/2023 6:56:41 AM	03-042-R60	REPAIR REPL RADIATOR	3.69	\$505.83	8/23/2023 10:39:07 AM
8/23/2023 6:58:08 AM	03-042-R60	REPAIR REPL RADIATOR	5.84	\$800.08	8/23/2023 12:48:52 PM
8/23/2023 6:58:08 AM	03-042-R60	REPAIR REPL RADIATOR	(5.84)	(\$800.08)	8/23/2023 12:56:52 PM
8/23/2023 12:00:02 PM	03-042-H52	REPAIR REPL HOSE'S	3.00	\$410.47	8/23/2023 2:54:05 PM
8/23/2023 12:49:02 PM	03-042-H52	REPAIR REPL HOSE'S	2.08	\$284.88	8/23/2023 2:53:50 PM
8/23/2023 12:49:02 PM	03-042-H52	REPAIR REPL HOSE'S	(2.08)	(\$284.88)	8/23/2023 2:54:06 PM
8/23/2023 1:05:21 PM	03-042-R60	REPAIR REPL RADIATOR	1.99	\$272.40	8/23/2023 3:04:41 PM
8/23/2023 1:05:21 PM	03-042-R60	REPAIR REPL RADIATOR	(1.99)	(\$272.40)	8/24/2023 6:38:07 AM
8/23/2023 1:05:21 PM	03-042-R60	REPAIR REPL RADIATOR	1.91	\$261.78	8/24/2023 6:38:06 AM
8/24/2023 6:45:42 AM	03-042-H52	REPAIR REPL HOSE'S	4.75	\$651.02	8/24/2023 2:33:43 PM
8/24/2023 7:10:42 AM	03-042-H52	REPAIR REPL HOSE'S	5.17	\$708.10	8/24/2023 12:20:52 PM
8/24/2023 7:10:42 AM	03-042-H52	REPAIR REPL HOSE'S	(5.17)	(\$708.10)	8/24/2023 2:33:43 PM
8/24/2023 7:15:26 AM	03-042-R60	REPAIR REPL RADIATOR	(7.84)	(\$1,073.66)	8/25/2023 6:50:29 AM
8/24/2023 7:15:26 AM	03-042-R60	REPAIR REPL RADIATOR	7.24	\$992.26	8/25/2023 6:50:28 AM
8/24/2023 7:15:26 AM	03-042-R60	REPAIR REPL RADIATOR	7.84	\$1,073.66	8/24/2023 3:05:41 PM

s.22(1)	8/24/2023 12:00:55 PM	03-042-TF0	REPAIR REPL THERMOSTAT	2.98	\$408.26	8/24/2023 2:33:43 PM
	8/24/2023 12:21:55 PM	03-042-TF0	REPAIR REPL THERMOSTAT	2.18	\$298.66	8/24/2023 2:32:46 PM
	8/24/2023 12:21:55 PM	03-042-TF0	REPAIR REPL THERMOSTAT	(2.18)	(\$298.66)	8/24/2023 2:33:44 PM
	8/25/2023 9:27:24 AM	03-044-H50	REPAIR REPL HOSE	2.61	\$358.10	8/25/2023 12:04:21 PM
	8/25/2023 9:27:24 AM	03-044-H50	REPAIR REPL HOSE	(2.61)	(\$358.10)	8/25/2023 12:05:35 PM
	8/28/2023 6:31:33 AM	03-042-TF0	REPAIR REPL THERMOSTAT	4.96	\$680.13	8/28/2023 11:29:28 AM
	8/28/2023 6:31:33 AM	03-042-TF0	REPAIR REPL THERMOSTAT	(4.96)	(\$680.13)	8/28/2023 12:09:05 PM
	8/28/2023 6:41:33 AM	03-042-TF0	REPAIR REPL THERMOSTAT	4.80	\$657.30	8/28/2023 12:09:04 PM
	8/28/2023 12:00:35 PM	03-044-H50	REPAIR REPL HOSE	2.99	\$409.02	8/28/2023 2:15:04 PM
	8/28/2023 12:08:35 PM	03-044-H50	REPAIR REPL HOSE	2.10	\$288.00	8/28/2023 2:14:45 PM
	8/28/2023 12:08:35 PM	03-044-H50	REPAIR REPL HOSE	(2.10)	(\$288.00)	8/28/2023 2:15:05 PM
	8/29/2023 6:40:26 AM	03-042-H52	REPAIR REPL HOSE'S	(6.81)	(\$932.74)	8/29/2023 1:52:06 PM
	8/29/2023 6:40:26 AM	03-042-H52	REPAIR REPL HOSE'S	4.81	\$658.74	8/29/2023 1:52:05 PM
	8/29/2023 6:40:26 AM	03-042-H52	REPAIR REPL HOSE'S	6.81	\$932.74	8/29/2023 1:28:58 PM
	8/29/2023 12:00:07 PM	03-042-H52	REPAIR REPL HOSE'S	(2.97)	(\$407.08)	8/30/2023 7:12:06 AM
	8/29/2023 12:00:07 PM	03-042-H52	REPAIR REPL HOSE'S	3.00	\$410.73	8/30/2023 7:12:05 AM
	8/29/2023 12:00:07 PM	03-042-H52	REPAIR REPL HOSE'S	2.97	\$407.08	8/29/2023 2:39:06 PM
	8/29/2023 1:29:07 PM	03-042-H52	REPAIR REPL HOSE'S	1.15	\$158.20	8/29/2023 2:38:28 PM
	8/29/2023 1:29:07 PM	03-042-H52	REPAIR REPL HOSE'S	(1.15)	(\$158.20)	8/29/2023 2:39:06 PM
	8/30/2023 6:51:29 AM	03-042-H52	REPAIR REPL HOSE'S	2.05	\$280.66	8/30/2023 11:24:20 AM
	8/30/2023 7:11:29 AM	03-042-H52	REPAIR REPL HOSE'S	0.72	\$97.99	8/30/2023 7:54:26 AM
	8/30/2023 7:11:29 AM	03-042-H52	REPAIR REPL HOSE'S	(0.72)	(\$97.99)	8/30/2023 11:24:21 AM
	8/30/2023 11:02:32 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.47	\$64.20	8/30/2023 11:30:39 AM
	8/30/2023 12:00:41 PM	03-024-A00	REPAIR REPL ASSEMBLY	(2.99)	(\$409.29)	8/30/2023 2:47:14 PM
	8/30/2023 12:00:41 PM	03-024-A00	REPAIR REPL ASSEMBLY	2.99	\$409.29	8/30/2023 2:47:05 PM
	8/30/2023 12:00:53 PM	03-024-A00	REPAIR REPL ASSEMBLY	2.96	\$404.99	8/30/2023 2:49:00 PM
	8/30/2023 12:00:53 PM	03-042-H52	REPAIR REPL HOSE'S	2.72	\$373.02	8/30/2023 2:47:05 PM
	8/30/2023 12:00:53 PM	03-042-H52	REPAIR REPL HOSE'S	(2.72)	(\$373.02)	8/30/2023 2:48:42 PM
	8/30/2023 12:03:41 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.97	\$406.70	8/30/2023 3:01:48 PM
	8/30/2023 12:07:53 PM	03-042-H52	REPAIR REPL HOSE'S	2.61	\$357.04	8/30/2023 2:44:27 PM
	8/30/2023 12:07:53 PM	03-042-H52	REPAIR REPL HOSE'S	(2.61)	(\$357.04)	8/30/2023 2:47:06 PM
	8/30/2023 2:44:15 PM	03-024-A00	REPAIR REPL ASSEMBLY	0.23	\$31.97	8/30/2023 2:48:36 PM
	8/30/2023 2:44:15 PM	03-024-A00	REPAIR REPL ASSEMBLY	(0.23)	(\$31.97)	8/30/2023 2:49:01 PM
	8/30/2023 2:44:15 PM	03-028	REPAIR REPL POWERTRAIN	0.02	\$3.27	8/30/2023 2:45:46 PM

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	8/30/2023 2:44:15 PM	03-028	REPAIR REPL POWERTRAIN	(0.02)	(\$3.27)	8/30/2023 2:47:06 PM
	8/30/2023 2:45:41 PM	03-024-A00	REPAIR REPL ASSEMBLY	0.00	\$0.57	8/30/2023 2:45:58 PM
	8/30/2023 2:45:41 PM	03-024-A00	REPAIR REPL ASSEMBLY	0.00	(\$0.57)	8/30/2023 2:47:06 PM
	8/31/2023 6:39:04 AM	03-042-H52	REPAIR REPL HOSE'S	0.84	\$114.97	8/31/2023 7:29:31 AM
	8/31/2023 6:39:04 AM	03-042-H52	REPAIR REPL HOSE'S	(0.84)	(\$114.97)	9/5/2023 12:20:36 PM
	8/31/2023 7:29:25 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	4.01	\$549.33	8/31/2023 2:59:44 PM
	8/31/2023 7:34:00 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	3.93	\$538.87	8/31/2023 2:58:55 PM
	8/31/2023 7:34:00 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(3.93)	(\$538.87)	8/31/2023 2:59:45 PM
	8/31/2023 7:34:00 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(7.37)	(\$1,009.96)	8/31/2023 2:58:55 PM
	8/31/2023 7:34:00 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	7.37	\$1,009.96	8/31/2023 2:56:22 PM
	8/31/2023 12:00:00 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	2.97	\$406.74	8/31/2023 2:58:26 PM
	8/31/2023 1:28:08 PM	12-045-B21	REFINISH BELT'S	1.68	\$230.43	8/31/2023 3:09:05 PM
	8/31/2023 1:28:08 PM	12-045-B21	REFINISH BELT'S	(1.68)	(\$230.43)	8/31/2023 6:00:37 PM
	8/31/2023 1:28:08 PM	12-045-B21	REFINISH BELT'S	1.60	\$219.01	8/31/2023 6:00:36 PM
	8/31/2023 2:56:58 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.02	\$2.66	8/31/2023 2:58:10 PM
	8/31/2023 2:56:58 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(0.02)	(\$2.66)	8/31/2023 2:58:27 PM
	9/5/2023 6:56:16 AM	03-031-A00	REPAIR REPL ALTERNATOR	4.59	\$628.75	9/5/2023 12:16:57 PM
	9/5/2023 7:26:16 AM	03-031-A00	REPAIR REPL ALTERNATOR	4.82	\$660.72	9/5/2023 12:15:43 PM
	9/5/2023 7:26:16 AM	03-031-A00	REPAIR REPL ALTERNATOR	(4.82)	(\$660.72)	9/5/2023 12:16:58 PM
	9/5/2023 12:01:55 PM	03-042-H52	REPAIR REPL HOSE'S	2.94	\$402.89	9/5/2023 2:47:51 PM
	9/5/2023 12:01:55 PM	03-042-H52	REPAIR REPL HOSE'S	2.92	\$400.61	9/5/2023 2:47:42 PM
	9/5/2023 12:01:55 PM	03-042-H52	REPAIR REPL HOSE'S	(2.92)	(\$400.61)	9/5/2023 2:47:52 PM
	9/5/2023 12:15:55 PM	03-042-H52	REPAIR REPL HOSE'S	2.52	\$345.81	9/5/2023 2:47:24 PM
	9/5/2023 12:15:55 PM	03-042-H52	REPAIR REPL HOSE'S	(2.52)	(\$345.81)	9/5/2023 2:47:42 PM
	9/6/2023 6:31:46 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.02	\$687.82	9/6/2023 11:33:05 AM
	9/6/2023 6:42:02 AM	03-042-H52	REPAIR REPL HOSE'S	8.01	\$1,096.88	9/6/2023 2:42:27 PM
	9/6/2023 6:42:02 AM	03-042-H52	REPAIR REPL HOSE'S	(8.01)	(\$1,096.88)	9/6/2023 2:44:28 PM
	9/6/2023 6:42:02 AM	03-042-H52	REPAIR REPL HOSE'S	4.81	\$658.48	9/6/2023 2:44:28 PM
	9/6/2023 10:08:27 AM	13-MCH-020	OTHER MAINT DRILL/TAP	2.27	\$311.03	9/6/2023 12:24:42 PM
	9/6/2023 12:00:48 PM	03-042-H52	REPAIR REPL HOSE'S	2.96	\$404.87	9/6/2023 2:44:28 PM
	9/6/2023 12:05:09 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.96	\$405.94	9/6/2023 3:02:57 PM
	9/6/2023 2:42:48 PM	03-042-H52	REPAIR REPL HOSE'S	0.01	\$0.72	9/6/2023 2:43:08 PM
	9/6/2023 2:42:48 PM	03-042-H52	REPAIR REPL HOSE'S	(0.01)	(\$0.72)	9/6/2023 2:44:28 PM
	9/6/2023 2:42:48 PM	03-042-H52	REPAIR REPL HOSE'S	0.26	\$34.97	9/6/2023 2:44:28 PM

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	9/6/2023 2:42:48 PM	03-042-H52	REPAIR REPL HOSE'S	(0.26)	(\$34.97)	9/6/2023 2:44:28 PM
	9/7/2023 6:33:42 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.91	\$672.90	9/7/2023 11:28:24 AM
	9/7/2023 7:02:31 AM	03-028	REPAIR REPL POWERTRAIN	0.45	\$62.18	9/7/2023 7:30:23 AM
	9/7/2023 7:28:31 AM	03-028	REPAIR REPL POWERTRAIN	0.02	\$2.82	9/7/2023 7:29:59 AM
	9/7/2023 7:28:31 AM	03-028	REPAIR REPL POWERTRAIN	(0.02)	(\$2.82)	9/7/2023 7:30:23 AM
	9/7/2023 7:29:45 AM	03-043-PB0	REPAIR REPL PIPE	7.31	\$1,001.62	9/7/2023 2:48:27 PM
	9/7/2023 7:29:45 AM	03-043-PB0	REPAIR REPL PIPE	(7.31)	(\$1,001.62)	9/7/2023 2:49:55 PM
	9/7/2023 7:29:45 AM	03-043-PB0	REPAIR REPL PIPE	3.98	\$544.96	9/7/2023 2:49:54 PM
	9/7/2023 9:53:02 AM	13-MCH-020	OTHER MAINT DRILL/TAP	2.76	\$377.44	9/7/2023 12:38:22 PM
	9/7/2023 12:00:00 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.08	\$421.85	9/8/2023 7:46:35 AM
	9/7/2023 12:00:49 PM	03-043-PB0	REPAIR REPL PIPE	2.97	\$406.93	9/7/2023 2:50:06 PM
	9/7/2023 12:06:59 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.96	\$405.90	9/7/2023 3:04:45 PM
	9/7/2023 12:06:59 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.96)	(\$405.90)	9/8/2023 7:46:36 AM
	9/7/2023 2:00:49 PM	03-043-PB0	REPAIR REPL PIPE	0.97	\$132.93	9/7/2023 2:49:55 PM
	9/7/2023 2:00:49 PM	03-043-PB0	REPAIR REPL PIPE	(0.97)	(\$132.93)	9/7/2023 2:50:07 PM
	9/7/2023 2:48:49 PM	03-043-PB0	REPAIR REPL PIPE	0.00	\$0.49	9/7/2023 2:49:04 PM
	9/7/2023 2:48:49 PM	03-043-PB0	REPAIR REPL PIPE	0.00	(\$0.49)	9/7/2023 2:49:55 PM
	9/8/2023 6:36:05 AM	03-043-M30	REPAIR REPL MANIFOLD	(4.78)	(\$654.78)	9/8/2023 2:40:25 PM
	9/8/2023 6:36:05 AM	03-043-M30	REPAIR REPL MANIFOLD	4.78	\$654.78	9/8/2023 11:22:53 AM
	9/8/2023 6:48:05 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	4.69	\$641.85	9/8/2023 2:41:57 PM
	9/8/2023 6:48:05 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	7.85	\$1,075.68	9/8/2023 2:41:09 PM
	9/8/2023 6:48:05 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	(7.85)	(\$1,075.68)	9/8/2023 2:41:57 PM
	9/8/2023 7:37:44 AM	03-010-B49	REPAIR REPL MISC BRACKETS	3.82	\$523.57	9/8/2023 11:27:06 AM
	9/8/2023 7:47:43 AM	13-MCH-020	OTHER MAINT DRILL/TAP	0.10	\$14.27	9/8/2023 7:54:06 AM
	9/8/2023 7:53:58 AM	13-028	OTHER MAINT POWERTRAIN	2.52	\$345.32	9/8/2023 10:25:13 AM
	9/8/2023 12:00:21 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	2.99	\$409.21	9/8/2023 2:40:24 PM
	9/8/2023 12:03:29 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.94	\$403.05	9/11/2023 6:15:04 AM
	9/8/2023 12:03:29 PM	03-010-B49	REPAIR REPL MISC BRACKETS	66.17	\$9,064.99	9/11/2023 6:13:35 AM
	9/8/2023 12:03:29 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(66.17)	(\$9,064.99)	9/11/2023 6:15:05 AM
	9/8/2023 2:38:59 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	\$0.46	9/8/2023 2:39:13 PM
	9/8/2023 2:38:59 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	(\$0.46)	9/8/2023 2:41:09 PM
	9/8/2023 2:39:21 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	\$0.49	9/8/2023 2:39:36 PM
	9/8/2023 2:39:21 PM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	(\$0.49)	9/8/2023 2:40:25 PM
	9/11/2023 6:44:00 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	1.84	\$251.66	9/11/2023 2:37:58 PM

s.22(1)	9/11/2023 8:34:00 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	\$0.49	9/11/2023 8:34:26 AM
	9/11/2023 8:34:00 AM	03-027-000	REPAIR REPL AUTOMATIC TRANS SYSTEM	0.00	(\$0.49)	9/11/2023 2:37:58 PM
	9/11/2023 8:34:13 AM	03-042-TF0	REPAIR REPL THERMOSTAT	2.94	\$402.48	9/11/2023 2:37:58 PM
	9/11/2023 8:34:13 AM	03-042-TF0	REPAIR REPL THERMOSTAT	6.00	\$822.61	9/11/2023 2:34:46 PM
	9/11/2023 8:34:13 AM	03-042-TF0	REPAIR REPL THERMOSTAT	(6.00)	(\$822.61)	9/11/2023 2:37:58 PM
	9/11/2023 12:00:08 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.99	\$409.14	9/11/2023 2:37:58 PM
	9/11/2023 2:36:08 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	\$0.42	9/11/2023 2:36:22 PM
	9/11/2023 2:36:08 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	(\$0.42)	9/11/2023 2:37:58 PM
	9/11/2023 2:36:08 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.39	\$52.94	9/11/2023 2:37:58 PM
	9/11/2023 2:36:08 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(0.39)	(\$52.94)	9/11/2023 2:37:58 PM
	9/12/2023 6:33:40 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.92	\$674.53	9/12/2023 11:29:05 AM
	9/12/2023 6:44:02 AM	03-042-R60	REPAIR REPL RADIATOR	4.77	\$653.19	9/12/2023 12:03:52 PM
	9/12/2023 6:44:02 AM	03-042-R60	REPAIR REPL RADIATOR	5.32	\$728.54	9/12/2023 12:03:08 PM
	9/12/2023 6:44:02 AM	03-042-R60	REPAIR REPL RADIATOR	(5.32)	(\$728.54)	9/12/2023 12:03:53 PM
	9/12/2023 12:03:29 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.92	\$400.34	9/12/2023 2:58:48 PM
	9/13/2023 6:50:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.66	\$638.61	9/14/2023 7:06:33 AM
	9/13/2023 6:54:30 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.59	\$628.34	9/13/2023 11:29:43 AM
	9/13/2023 6:54:30 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.59)	(\$628.34)	9/14/2023 7:06:34 AM
	9/13/2023 7:01:06 AM	03-024-000	REPAIR REPL SYSTEM	1.75	\$240.21	9/13/2023 10:08:01 AM
	9/13/2023 7:01:06 AM	03-024-000	REPAIR REPL SYSTEM	(1.75)	(\$240.21)	9/13/2023 10:08:33 AM
	9/13/2023 7:01:06 AM	03-024-000	REPAIR REPL SYSTEM	1.92	\$263.04	9/13/2023 10:08:32 AM
	9/13/2023 7:01:06 AM	03-024-000	REPAIR REPL SYSTEM	3.09	\$422.87	9/13/2023 10:06:19 AM
	9/13/2023 7:01:06 AM	03-024-000	REPAIR REPL SYSTEM	(3.09)	(\$422.87)	9/13/2023 10:08:01 AM
	9/13/2023 7:35:21 AM	11-028	REBUILD COMP POWERTRAIN	1.17	\$160.86	9/13/2023 8:45:50 AM
	9/13/2023 12:03:08 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.28	\$449.51	9/14/2023 7:06:32 AM
	9/13/2023 12:03:08 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.19	\$436.50	9/13/2023 3:14:20 PM
	9/13/2023 12:03:08 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(3.19)	(\$436.50)	9/14/2023 7:06:33 AM
	9/14/2023 6:33:35 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.97	\$681.23	9/14/2023 11:31:57 AM
	9/14/2023 6:54:47 AM	03-043-M30	REPAIR REPL MANIFOLD	(5.57)	(\$763.51)	9/14/2023 12:29:52 PM
	9/14/2023 6:54:47 AM	03-043-M30	REPAIR REPL MANIFOLD	4.57	\$626.51	9/14/2023 12:29:52 PM
	9/14/2023 6:54:47 AM	03-043-M30	REPAIR REPL MANIFOLD	5.57	\$763.51	9/14/2023 12:29:12 PM
	9/14/2023 12:00:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.98	\$408.34	9/14/2023 2:49:35 PM
	9/14/2023 12:07:02 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.00	\$411.34	9/14/2023 3:07:11 PM
	9/14/2023 12:29:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.33	\$319.29	9/14/2023 2:49:02 PM

s.22(1)	9/14/2023 12:29:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.33)	(\$319.29)	9/14/2023 2:49:35 PM
	9/15/2023 6:45:38 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.75	\$650.29	9/15/2023 2:54:58 PM
	9/15/2023 7:45:38 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	7.13	\$976.81	9/15/2023 2:53:28 PM
	9/15/2023 7:45:38 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(7.13)	(\$976.81)	9/15/2023 2:54:59 PM
	9/15/2023 12:00:46 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.99	\$409.14	9/15/2023 2:54:58 PM
	9/15/2023 2:53:46 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	\$0.42	9/15/2023 2:54:00 PM
	9/15/2023 2:53:46 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	(\$0.42)	9/15/2023 2:54:59 PM
	9/18/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.98	\$682.03	9/19/2023 6:23:39 AM
	9/18/2023 6:32:03 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.94	\$677.35	9/18/2023 11:28:42 AM
	9/18/2023 6:32:03 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.94)	(\$677.35)	9/19/2023 6:23:40 AM
	9/18/2023 6:51:42 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.99	\$409.78	9/18/2023 2:21:44 PM
	9/18/2023 7:01:42 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.82	\$386.95	9/18/2023 11:26:23 AM
	9/18/2023 7:01:42 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.82)	(\$386.95)	9/18/2023 2:21:44 PM
	9/18/2023 7:01:42 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	3.82	\$523.95	9/18/2023 10:51:21 AM
	9/18/2023 7:01:42 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(3.82)	(\$523.95)	9/18/2023 11:26:23 AM
	9/18/2023 12:04:46 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.86	\$392.43	9/18/2023 2:56:39 PM
	9/18/2023 12:04:46 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.86)	(\$392.43)	9/19/2023 6:23:40 AM
	9/18/2023 12:04:46 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.92	\$400.12	9/19/2023 6:23:39 AM
	9/18/2023 2:20:27 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	\$0.46	9/18/2023 2:20:40 PM
	9/18/2023 2:20:27 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	(\$0.46)	9/18/2023 2:21:19 PM
	9/18/2023 2:20:27 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.65	\$89.51	9/18/2023 2:21:18 PM
	9/19/2023 6:41:22 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(4.79)	(\$656.88)	9/19/2023 2:50:05 PM
	9/19/2023 6:41:22 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.79	\$656.88	9/19/2023 11:29:06 AM
	9/19/2023 6:41:22 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	4.79	\$656.88	9/19/2023 2:51:00 PM
	9/19/2023 12:00:39 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	2.99	\$409.21	9/19/2023 2:51:00 PM
	9/19/2023 12:05:15 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.91	\$398.37	9/19/2023 2:59:44 PM
	9/19/2023 2:47:39 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.01	\$1.29	9/19/2023 2:48:21 PM
	9/19/2023 2:47:39 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(0.01)	(\$1.29)	9/19/2023 2:51:01 PM
	9/19/2023 2:48:13 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.03	\$3.77	9/19/2023 2:49:54 PM
	9/19/2023 2:48:13 PM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(0.03)	(\$3.77)	9/19/2023 2:51:01 PM
9/20/2023 6:32:27 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.95	\$677.58	9/20/2023 11:29:12 AM	
9/20/2023 6:42:49 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	3.62	\$495.64	9/20/2023 12:21:15 PM	
9/20/2023 6:42:49 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	5.62	\$769.64	9/20/2023 12:19:55 PM	
9/20/2023 6:42:49 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(5.62)	(\$769.64)	9/20/2023 12:21:15 PM	

s.22(1)	9/20/2023 10:19:53 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.16	\$158.39	9/20/2023 12:21:15 PM
	9/20/2023 12:00:15 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.99	\$410.24	9/20/2023 2:58:14 PM
	9/20/2023 12:05:39 PM	03-010-B49	REPAIR REPL MISC BRACKETS	1.61	\$220.42	9/20/2023 1:42:13 PM
	9/20/2023 12:20:06 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	\$0.34	9/20/2023 12:20:21 PM
	9/20/2023 12:20:06 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.00	(\$0.34)	9/20/2023 12:21:15 PM
	9/20/2023 12:20:15 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.63	\$360.01	9/20/2023 2:57:57 PM
	9/20/2023 12:20:15 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.63)	(\$360.01)	9/20/2023 2:58:15 PM
	9/20/2023 2:13:40 PM	03-010-B49	REPAIR REPL MISC BRACKETS	0.84	\$114.78	9/20/2023 3:03:56 PM
	9/21/2023 6:30:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.50	\$68.50	9/21/2023 10:12:04 AM
	9/21/2023 6:30:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(0.50)	(\$68.50)	9/21/2023 1:54:59 PM
	9/21/2023 6:32:34 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.95	\$677.81	9/21/2023 11:29:27 AM
	9/21/2023 6:47:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.68	\$640.59	9/21/2023 12:08:53 PM
	9/21/2023 6:57:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	5.18	\$709.09	9/21/2023 12:08:07 PM
	9/21/2023 6:57:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(5.18)	(\$709.09)	9/21/2023 12:08:53 PM
	9/21/2023 8:00:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.00	\$137.00	9/21/2023 1:54:58 PM
	9/21/2023 9:00:00 AM	03-052-R91	REPAIR REPL RADIO AM/FM	1.50	\$205.50	9/21/2023 1:55:35 PM
	9/21/2023 12:00:17 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.99	\$409.86	9/21/2023 2:46:07 PM
	9/21/2023 12:00:17 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.99)	(\$409.86)	9/21/2023 2:46:16 PM
	9/21/2023 12:00:17 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.98	\$407.58	9/21/2023 2:46:16 PM
	9/21/2023 12:07:13 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.02	\$413.70	9/21/2023 3:08:24 PM
	9/21/2023 12:08:17 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.63	\$359.63	9/21/2023 2:45:48 PM
	9/21/2023 12:08:17 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.63)	(\$359.63)	9/21/2023 2:46:07 PM
	9/22/2023 6:44:04 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(8.10)	(\$1,109.55)	9/22/2023 2:50:42 PM
	9/22/2023 6:44:04 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.77	\$652.88	9/22/2023 2:50:41 PM
	9/22/2023 6:44:04 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	8.10	\$1,109.55	9/22/2023 2:50:02 PM
	9/22/2023 9:30:00 AM	03-052-R91	REPAIR REPL RADIO AM/FM	2.00	\$274.00	9/22/2023 2:06:09 PM
	9/22/2023 12:00:00 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	3.00	\$411.00	9/25/2023 7:45:53 AM
	9/22/2023 2:50:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.02	\$2.36	9/22/2023 2:51:14 PM
	9/22/2023 2:50:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(0.16)	(\$22.45)	9/25/2023 7:45:53 AM
	9/22/2023 2:50:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(0.02)	(\$2.36)	9/25/2023 7:45:25 AM
	9/22/2023 2:50:10 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.16	\$22.45	9/25/2023 7:45:25 AM
	9/25/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.00	\$685.46	9/27/2023 7:03:14 AM
	9/25/2023 6:32:55 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.95	\$678.80	9/25/2023 11:30:13 AM
	9/25/2023 6:32:55 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.95)	(\$678.80)	9/27/2023 7:03:14 AM



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9/25/2023 6:57:17 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.52	\$619.35	9/25/2023 12:19:39 PM
9/25/2023 6:57:17 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	5.35	\$733.52	9/25/2023 12:18:35 PM
9/25/2023 6:57:17 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(5.35)	(\$733.52)	9/25/2023 12:19:39 PM
9/25/2023 12:00:00 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.01	\$412.10	9/27/2023 7:03:14 AM
9/25/2023 12:00:44 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.96	\$404.87	9/25/2023 2:56:26 PM
9/25/2023 12:06:06 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.91	\$398.18	9/25/2023 3:00:30 PM
9/25/2023 12:06:06 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.91)	(\$398.18)	9/27/2023 7:03:15 AM
9/25/2023 12:18:44 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.62	\$359.21	9/25/2023 2:56:05 PM
9/25/2023 12:18:44 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.62)	(\$359.21)	9/25/2023 2:56:26 PM
9/26/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.02	\$687.13	9/27/2023 8:04:44 AM
9/26/2023 6:33:29 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.96	\$679.18	9/26/2023 11:30:57 AM
9/26/2023 6:33:29 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.96)	(\$679.18)	9/27/2023 8:04:44 AM
9/26/2023 6:44:14 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.76	\$652.50	9/27/2023 7:22:19 AM
9/26/2023 10:15:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.25	\$171.25	9/26/2023 1:57:25 PM
9/26/2023 12:00:00 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.99	\$409.25	9/27/2023 8:04:44 AM
9/26/2023 12:00:00 PM	03-054-HP1	REPAIR REPL HORN AIR	3.00	\$410.73	9/27/2023 7:23:54 AM
9/26/2023 12:02:56 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.94	\$402.55	9/26/2023 2:59:14 PM
9/26/2023 12:02:56 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.94)	(\$402.55)	9/27/2023 8:04:45 AM
9/27/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.00	\$684.70	9/28/2023 6:28:22 AM
9/27/2023 6:32:12 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.96	\$679.67	9/27/2023 11:29:52 AM
9/27/2023 6:32:12 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.96)	(\$679.67)	9/28/2023 6:28:23 AM
9/27/2023 6:42:31 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	2.29	\$313.69	9/28/2023 9:48:41 AM
9/27/2023 6:42:31 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	1.81	\$247.63	9/27/2023 8:31:49 AM
9/27/2023 6:42:31 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(1.81)	(\$247.63)	9/28/2023 9:48:42 AM
9/27/2023 8:30:37 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	0.01	\$0.80	9/27/2023 8:31:14 AM
9/27/2023 8:30:37 AM	03-045-000	REPAIR REPL MAIN ENGINE SYSTEM	(0.01)	(\$0.80)	9/27/2023 8:31:49 AM
9/27/2023 8:30:58 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.98	\$408.26	9/27/2023 2:46:50 PM
9/27/2023 8:30:58 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.98)	(\$408.26)	9/28/2023 9:48:42 AM
9/27/2023 8:30:58 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	6.20	\$848.94	9/27/2023 2:42:48 PM
9/27/2023 8:30:58 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(6.20)	(\$848.94)	9/27/2023 2:46:50 PM
9/27/2023 10:15:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.25	\$170.72	9/28/2023 9:48:41 AM
9/27/2023 12:00:19 PM	03-043-PB0	REPAIR REPL PIPE	2.99	\$410.05	9/27/2023 2:46:50 PM
9/27/2023 12:02:29 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.95	\$404.00	9/27/2023 2:59:25 PM
9/27/2023 2:43:19 PM	03-043-PB0	REPAIR REPL PIPE	0.04	\$5.90	9/27/2023 2:45:55 PM

s.22(1)		9/27/2023 2:43:19 PM	03-043-PB0	REPAIR REPL PIPE	(0.04)	(\$5.90)	9/27/2023 2:46:50 PM
		9/28/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.66	\$90.34	9/29/2023 8:06:20 AM
		9/28/2023 6:33:29 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.60	\$82.39	9/28/2023 7:09:35 AM
		9/28/2023 6:33:29 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(0.60)	(\$82.39)	9/29/2023 8:06:20 AM
		9/28/2023 6:57:13 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	4.52	\$619.28	9/28/2023 2:49:09 PM
		9/28/2023 7:07:13 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	5.02	\$687.78	9/28/2023 12:08:28 PM
		9/28/2023 7:07:13 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	(5.02)	(\$687.78)	9/28/2023 12:09:08 PM
		9/28/2023 7:07:13 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	4.35	\$596.44	9/28/2023 12:09:08 PM
		9/28/2023 7:07:13 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	(4.35)	(\$596.44)	9/28/2023 2:49:10 PM
		9/28/2023 11:10:27 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.04	\$5.75	9/28/2023 11:13:23 AM
		9/28/2023 12:00:37 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.95	\$404.30	9/28/2023 2:48:50 PM
		9/28/2023 12:00:37 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(2.95)	(\$404.30)	9/29/2023 6:51:31 AM
		9/28/2023 12:00:37 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.99	\$409.59	9/29/2023 6:51:31 AM
		9/28/2023 12:08:37 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.65	\$363.20	9/28/2023 2:47:43 PM
		9/28/2023 12:08:37 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(2.65)	(\$363.20)	9/28/2023 2:48:51 PM
		9/28/2023 12:29:32 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.51	\$343.57	9/29/2023 8:06:41 AM
		9/28/2023 12:29:32 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.54	\$347.41	9/28/2023 3:01:42 PM
		9/28/2023 12:29:32 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.54)	(\$347.41)	9/29/2023 8:06:41 AM
		9/29/2023 7:26:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	7.34	\$1,005.43	9/29/2023 2:46:54 PM
		9/29/2023 7:26:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(7.34)	(\$1,005.43)	9/29/2023 2:49:13 PM
		9/29/2023 7:26:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	4.07	\$557.89	9/29/2023 2:49:13 PM
		9/29/2023 9:00:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	2.50	\$342.50	9/29/2023 1:16:00 PM
		9/29/2023 12:00:18 PM	03-028	REPAIR REPL POWERTRAIN	2.98	\$407.65	9/29/2023 2:49:13 PM
		9/29/2023 2:47:18 PM	03-028	REPAIR REPL POWERTRAIN	0.01	\$1.22	9/29/2023 2:47:50 PM
		9/29/2023 2:47:18 PM	03-028	REPAIR REPL POWERTRAIN	(0.01)	(\$1.22)	9/29/2023 2:49:13 PM
		9/29/2023 2:47:50 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(15.08)	(\$2,066.57)	9/30/2023 5:53:58 AM
		9/29/2023 2:47:50 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	15.08	\$2,066.57	9/30/2023 5:52:56 AM
		9/30/2023 5:53:26 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	3.79	\$519.12	9/30/2023 9:40:48 AM
		9/30/2023 5:53:26 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(3.79)	(\$519.12)	9/30/2023 9:43:07 AM
		9/30/2023 5:59:26 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.69	\$231.42	9/30/2023 9:43:06 AM
		9/30/2023 7:40:47 AM	03-034-B60	REPAIR REPL HEADLIGHT	2.03	\$277.62	9/30/2023 9:43:07 AM
		9/30/2023 9:40:47 AM	03-034-B60	REPAIR REPL HEADLIGHT	0.03	\$3.62	9/30/2023 9:42:24 AM
		9/30/2023 9:40:47 AM	03-034-B60	REPAIR REPL HEADLIGHT	(0.03)	(\$3.62)	9/30/2023 9:43:07 AM
		9/30/2023 9:42:22 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	6.25	\$856.10	9/30/2023 3:57:20 PM

s.22(1)	10/3/2023 6:32:23 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.95	\$678.26	10/3/2023 11:29:25 AM
	10/3/2023 6:46:15 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.43	\$58.53	10/3/2023 7:12:03 AM
	10/3/2023 7:11:40 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	3.40	\$465.99	10/3/2023 10:35:56 AM
	10/3/2023 7:11:53 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.33	\$592.79	10/3/2023 2:53:21 PM
	10/3/2023 7:11:53 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	7.66	\$1,049.46	10/3/2023 2:51:34 PM
	10/3/2023 7:11:53 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(7.66)	(\$1,049.46)	10/3/2023 2:53:22 PM
	10/3/2023 12:00:42 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.97	\$407.27	10/3/2023 2:54:34 PM
	10/3/2023 12:00:42 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.86	\$391.29	10/3/2023 2:54:08 PM
	10/3/2023 12:00:42 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(2.86)	(\$391.29)	10/3/2023 2:54:35 PM
	10/3/2023 12:06:51 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.99	\$409.02	10/3/2023 3:05:59 PM
	10/3/2023 2:51:42 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	0.01	\$0.84	10/3/2023 2:52:06 PM
	10/3/2023 2:51:42 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	(0.01)	(\$0.84)	10/3/2023 2:54:08 PM
	10/4/2023 6:32:21 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.97	\$681.54	10/4/2023 11:30:50 AM
	10/4/2023 6:55:51 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(8.07)	(\$1,106.24)	10/4/2023 3:01:27 PM
	10/4/2023 6:55:51 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.57	\$625.98	10/4/2023 3:01:27 PM
	10/4/2023 6:55:51 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	8.07	\$1,106.24	10/4/2023 3:00:22 PM
	10/4/2023 12:00:00 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	3.01	\$412.86	10/4/2023 3:01:27 PM
	10/4/2023 12:00:00 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.00	\$411.00	10/5/2023 6:37:21 AM
	10/4/2023 12:05:48 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.95	\$404.15	10/4/2023 3:02:49 PM
	10/4/2023 12:05:48 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.95)	(\$404.15)	10/5/2023 6:37:22 AM
	10/4/2023 3:00:35 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	\$0.53	10/4/2023 3:00:50 PM
	10/4/2023 3:00:35 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	(\$0.53)	10/4/2023 3:01:27 PM
	10/5/2023 6:31:55 AM	03-010-B49	REPAIR REPL MISC BRACKETS	8.42	\$1,153.39	10/5/2023 2:57:04 PM
	10/5/2023 6:57:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.51	\$618.33	10/5/2023 2:59:40 PM
	10/5/2023 6:57:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(8.01)	(\$1,097.83)	10/5/2023 2:59:41 PM
	10/5/2023 6:57:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	8.01	\$1,097.83	10/5/2023 2:57:54 PM
	10/5/2023 12:00:16 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	2.97	\$406.89	10/5/2023 2:59:40 PM
	10/5/2023 12:05:35 PM	21-CAR-X47	FABRICATE MILLWORK	1.84	\$251.47	10/5/2023 1:55:44 PM
	10/5/2023 2:58:16 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	\$0.46	10/5/2023 2:58:43 PM
	10/5/2023 2:58:16 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	(\$0.46)	10/5/2023 2:59:41 PM
	10/6/2023 6:32:51 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.03	\$552.45	10/6/2023 10:34:48 AM
	10/6/2023 6:36:13 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	8.35	\$1,144.25	10/6/2023 2:57:23 PM
	10/6/2023 6:36:13 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.85	\$664.75	10/6/2023 2:58:19 PM
	10/6/2023 6:36:13 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(8.35)	(\$1,144.25)	10/6/2023 2:58:19 PM

s.22(1)

10/6/2023 12:00:21 PM	03-028	REPAIR REPL POWERTRAIN	2.99	\$409.59	10/6/2023 2:58:19 PM
10/6/2023 2:57:21 PM	03-028	REPAIR REPL POWERTRAIN	0.01	\$0.88	10/6/2023 2:57:52 PM
10/6/2023 2:57:21 PM	03-028	REPAIR REPL POWERTRAIN	(0.01)	(\$0.88)	10/6/2023 2:58:19 PM
10/9/2023 6:02:45 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	0.40	\$54.65	10/9/2023 6:27:07 AM
10/9/2023 6:24:45 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	0.03	\$4.41	10/9/2023 6:26:43 AM
10/9/2023 6:24:45 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	(0.03)	(\$4.41)	10/9/2023 6:27:07 AM
10/9/2023 6:26:41 AM	03-033-SY0	REPAIR REPL IGNITION SWITCH	5.05	\$692.15	10/9/2023 11:29:50 AM
10/9/2023 11:29:49 AM	03-028	REPAIR REPL POWERTRAIN	19.55	\$2,677.67	10/10/2023 7:02:34 AM
10/9/2023 11:29:49 AM	03-028	REPAIR REPL POWERTRAIN	(19.55)	(\$2,677.67)	10/10/2023 7:03:55 AM
10/9/2023 11:29:49 AM	03-028	REPAIR REPL POWERTRAIN	4.54	\$621.49	10/10/2023 7:03:55 AM
10/10/2023 6:31:43 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.03	\$689.68	10/10/2023 11:33:46 AM
10/10/2023 7:03:08 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(3.00)	(\$411.08)	10/10/2023 10:04:01 AM
10/10/2023 7:03:08 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	3.00	\$411.08	10/10/2023 10:03:12 AM
10/10/2023 9:03:24 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	1.04	\$142.94	10/10/2023 10:06:47 AM
10/10/2023 9:40:22 AM	03-320-000	REPAIR REPL SYSTEM	5.41	\$741.78	10/10/2023 3:05:15 PM
10/10/2023 9:40:22 AM	03-320-000	REPAIR REPL SYSTEM	(5.41)	(\$741.78)	10/11/2023 2:42:43 PM
10/10/2023 10:03:24 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.04	\$5.94	10/10/2023 10:06:02 AM
10/10/2023 10:03:24 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(0.04)	(\$5.94)	10/10/2023 10:06:47 AM
10/10/2023 10:06:00 AM	03-044-C00	REPAIR REPL LINKAGES/CABLES	2.07	\$283.29	10/10/2023 12:10:05 PM
10/10/2023 10:06:00 AM	03-044-C00	REPAIR REPL LINKAGES/CABLES	(2.07)	(\$283.29)	10/10/2023 2:53:07 PM
10/10/2023 10:06:00 AM	03-044-C00	REPAIR REPL LINKAGES/CABLES	1.40	\$191.95	10/10/2023 2:53:06 PM
10/10/2023 12:00:00 PM	03-320-000	REPAIR REPL SYSTEM	3.09	\$422.95	10/11/2023 2:42:43 PM
10/10/2023 12:00:00 PM	03-320-000	REPAIR REPL SYSTEM	(3.09)	(\$422.95)	10/11/2023 2:43:02 PM
10/10/2023 12:00:00 PM	03-320-000	REPAIR REPL SYSTEM	3.00	\$411.00	10/11/2023 2:43:02 PM
10/10/2023 12:00:35 PM	03-044-C00	REPAIR REPL LINKAGES/CABLES	2.95	\$403.77	10/10/2023 2:53:06 PM
10/10/2023 12:04:30 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.07	\$420.02	10/10/2023 3:08:27 PM
10/10/2023 12:10:35 PM	03-044-C00	REPAIR REPL LINKAGES/CABLES	2.70	\$369.52	10/10/2023 2:52:26 PM
10/10/2023 12:10:35 PM	03-044-C00	REPAIR REPL LINKAGES/CABLES	(2.70)	(\$369.52)	10/10/2023 2:53:07 PM
10/10/2023 12:49:13 PM	13-028	OTHER MAINT POWERTRAIN	1.80	\$246.68	10/10/2023 2:44:44 PM
10/10/2023 12:49:13 PM	13-028	OTHER MAINT POWERTRAIN	1.92	\$262.66	10/10/2023 2:44:17 PM
10/10/2023 12:49:13 PM	13-028	OTHER MAINT POWERTRAIN	(1.92)	(\$262.66)	10/10/2023 2:44:45 PM
10/11/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.00	\$685.00	10/12/2023 6:32:12 AM
10/11/2023 6:46:20 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	2.92	\$400.50	10/11/2023 9:41:46 AM
10/11/2023 6:46:20 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(2.92)	(\$400.50)	10/11/2023 9:42:16 AM

s.22(1)	10/11/2023 6:46:20 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	1.92	\$263.50	10/11/2023 9:42:15 AM
	10/11/2023 8:01:32 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	1.63	\$223.77	10/11/2023 9:39:33 AM
	10/11/2023 9:40:00 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	5.28	\$723.70	10/11/2023 2:56:57 PM
	10/11/2023 9:41:58 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	5.28	\$723.66	10/11/2023 2:58:56 PM
	10/11/2023 12:03:03 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.95	\$403.96	10/11/2023 2:59:58 PM
	10/12/2023 6:31:25 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.94	\$676.59	10/12/2023 11:27:46 AM
	10/12/2023 6:58:14 AM	03-045-G61	REPAIR REPL TIMING GEAR	4.49	\$614.45	10/12/2023 3:00:10 PM
	10/12/2023 6:58:14 AM	03-045-G61	REPAIR REPL TIMING GEAR	7.99	\$1,093.95	10/12/2023 2:57:22 PM
	10/12/2023 6:58:14 AM	03-045-G61	REPAIR REPL TIMING GEAR	(7.99)	(\$1,093.95)	10/12/2023 3:00:10 PM
	10/12/2023 7:39:52 AM	12-028	REFINISH POWERTRAIN	3.83	\$524.86	10/12/2023 11:29:46 AM
	10/12/2023 7:58:18 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	3.53	\$483.38	10/13/2023 2:41:50 PM
	10/12/2023 7:58:18 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	6.83	\$936.17	10/12/2023 2:48:19 PM
	10/12/2023 7:58:18 AM	03-030-WT0	REPAIR REPL WIRING HARNESS	(6.83)	(\$936.17)	10/13/2023 2:41:51 PM
	10/12/2023 9:53:18 AM	12-008-A00	REFINISH ASSEMBLY	1.57	\$215.58	10/12/2023 11:27:44 AM
	10/12/2023 9:53:18 AM	12-008-A00	REFINISH ASSEMBLY	(1.57)	(\$215.58)	10/12/2023 2:38:10 PM
	10/12/2023 9:53:18 AM	12-008-A00	REFINISH ASSEMBLY	1.61	\$220.80	10/12/2023 2:38:10 PM
	10/12/2023 12:00:00 PM	03-030-WT0	REPAIR REPL WIRING HARNESS	2.80	\$383.60	10/13/2023 2:41:51 PM
	10/12/2023 12:00:03 PM	12-028	REFINISH POWERTRAIN	1.94	\$265.51	10/12/2023 3:02:30 PM
	10/12/2023 12:00:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.96	\$405.03	10/12/2023 2:58:50 PM
	10/12/2023 12:00:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(2.96)	(\$405.03)	10/13/2023 2:42:04 PM
	10/12/2023 12:00:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.99	\$409.52	10/13/2023 2:42:04 PM
	10/12/2023 12:00:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(2.99)	(\$409.52)	10/13/2023 2:42:28 PM
	10/12/2023 12:01:00 PM	12-008-A00	REFINISH ASSEMBLY	2.98	\$408.72	10/13/2023 6:08:31 AM
	10/12/2023 12:01:00 PM	12-008-A00	REFINISH ASSEMBLY	2.91	\$399.32	10/12/2023 2:55:54 PM
	10/12/2023 12:01:00 PM	12-008-A00	REFINISH ASSEMBLY	(2.91)	(\$399.32)	10/13/2023 6:08:33 AM
	10/12/2023 12:03:55 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.99	\$408.95	10/12/2023 3:03:01 PM
	10/12/2023 12:07:00 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.88	\$395.02	10/13/2023 2:42:27 PM
	10/12/2023 12:07:03 PM	12-028	REFINISH POWERTRAIN	1.82	\$249.53	10/12/2023 1:56:22 PM
	10/12/2023 12:07:03 PM	12-028	REFINISH POWERTRAIN	(1.82)	(\$249.53)	10/12/2023 3:02:30 PM
	10/12/2023 2:30:32 PM	12-028	REFINISH POWERTRAIN	0.51	\$70.14	10/12/2023 3:01:16 PM
	10/12/2023 2:57:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	0.01	\$0.88	10/12/2023 2:58:03 PM
	10/12/2023 2:57:39 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(0.01)	(\$0.88)	10/12/2023 2:58:50 PM
	10/13/2023 7:03:01 AM	12-028	REFINISH POWERTRAIN	3.36	\$460.02	10/13/2023 10:24:43 AM
	10/13/2023 7:03:11 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	4.43	\$607.56	10/13/2023 2:56:46 PM

s.22(1)	10/13/2023 7:03:11 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	6.82	\$934.07	10/13/2023 1:52:18 PM
	10/13/2023 7:03:11 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	(6.82)	(\$934.07)	10/13/2023 2:56:47 PM
	10/13/2023 7:39:59 AM	12-008-A00	REFINISH ASSEMBLY	3.73	\$510.55	10/13/2023 11:23:35 AM
	10/13/2023 7:51:13 AM	03-010-B49	REPAIR REPL MISC BRACKETS	3.70	\$506.44	10/13/2023 11:33:05 AM
	10/13/2023 12:00:29 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	2.99	\$409.74	10/13/2023 2:56:46 PM
	10/13/2023 12:03:43 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.92)	(\$400.27)	10/16/2023 6:21:15 AM
	10/13/2023 12:03:43 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.94	\$402.51	10/16/2023 6:21:14 AM
	10/13/2023 12:03:43 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.92	\$400.27	10/13/2023 2:59:01 PM
	10/13/2023 1:52:29 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	1.06	\$144.88	10/13/2023 2:55:57 PM
	10/13/2023 1:52:29 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(1.06)	(\$144.88)	10/13/2023 2:56:47 PM
	10/16/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.02	\$687.47	10/17/2023 6:58:42 AM
	10/16/2023 6:32:46 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.97	\$681.16	10/16/2023 11:31:04 AM
	10/16/2023 6:32:46 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(4.97)	(\$681.16)	10/17/2023 6:58:42 AM
	10/16/2023 10:29:33 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	1.00	\$137.00	10/16/2023 2:30:07 PM
	10/16/2023 10:29:33 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	(1.00)	(\$137.00)	10/16/2023 2:30:43 PM
	10/16/2023 10:29:33 AM	03-003-000	REPAIR REPL GAUGES SYSTEM	1.02	\$139.51	10/16/2023 2:30:42 PM
	10/16/2023 12:00:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	2.43	\$332.42	10/16/2023 2:30:59 PM
	10/16/2023 12:00:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	(2.43)	(\$332.42)	10/16/2023 2:55:25 PM
	10/16/2023 12:00:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	2.93	\$400.92	10/16/2023 2:55:25 PM
	10/16/2023 12:00:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	(2.93)	(\$400.92)	10/16/2023 2:55:40 PM
	10/16/2023 12:00:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	2.98	\$407.77	10/16/2023 2:55:39 PM
	10/16/2023 12:04:24 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.94	\$402.44	10/16/2023 3:00:38 PM
	10/16/2023 2:24:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	0.03	\$3.62	10/16/2023 2:26:24 PM
	10/16/2023 2:24:48 PM	03-014-CT0	REPAIR REPL COUNTER WEIGHT	(0.03)	(\$3.62)	10/16/2023 2:31:00 PM
	10/16/2023 2:26:23 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	0.05	\$7.42	10/16/2023 2:29:40 PM
	10/16/2023 2:26:23 PM	03-003-000	REPAIR REPL GAUGES SYSTEM	(0.05)	(\$7.42)	10/16/2023 2:30:07 PM
	10/17/2023 6:32:18 AM	03-010-B49	REPAIR REPL MISC BRACKETS	3.92	\$536.36	10/17/2023 10:27:13 AM
	10/17/2023 6:52:05 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.64	\$635.98	10/17/2023 3:03:58 PM
	10/17/2023 6:52:05 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	8.16	\$1,117.77	10/17/2023 3:01:40 PM
	10/17/2023 6:52:05 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(8.16)	(\$1,117.77)	10/17/2023 3:03:59 PM
	10/17/2023 12:01:37 PM	02-000	CLEAN UNIT SERVICES	3.01	\$412.98	10/17/2023 3:03:58 PM
	10/17/2023 12:03:46 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.03	\$414.65	10/17/2023 3:05:21 PM
	10/17/2023 3:02:18 PM	02-000	CLEAN UNIT SERVICES	0.00	(\$0.42)	10/17/2023 3:03:59 PM
	10/17/2023 3:02:18 PM	02-000	CLEAN UNIT SERVICES	0.00	\$0.42	10/17/2023 3:02:31 PM

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10/18/2023 6:33:12 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.90	\$671.34	10/18/2023 11:27:13 AM
10/18/2023 7:06:00 AM	02-000	CLEAN UNIT SERVICES	7.89	\$1,081.27	10/18/2023 2:59:35 PM
10/18/2023 7:06:00 AM	02-000	CLEAN UNIT SERVICES	(7.89)	(\$1,081.27)	10/18/2023 3:02:53 PM
10/18/2023 7:36:00 AM	02-000	CLEAN UNIT SERVICES	4.89	\$670.27	10/18/2023 3:02:53 PM
10/18/2023 7:36:00 AM	02-000	CLEAN UNIT SERVICES	(4.89)	(\$670.27)	10/18/2023 3:03:16 PM
10/18/2023 7:36:00 AM	02-000	CLEAN UNIT SERVICES	3.89	\$533.27	10/18/2023 3:03:16 PM
10/18/2023 12:00:05 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.75	\$102.56	10/18/2023 3:02:53 PM
10/18/2023 12:02:17 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.05	\$418.15	10/18/2023 3:05:25 PM
10/18/2023 3:00:05 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	\$0.57	10/18/2023 3:00:22 PM
10/18/2023 3:00:05 PM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	0.00	(\$0.57)	10/18/2023 3:02:53 PM
10/19/2023 6:32:03 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.03	\$688.54	10/19/2023 11:33:36 AM
10/19/2023 6:46:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	7.73	\$1,059.58	10/19/2023 2:55:22 PM
10/19/2023 6:46:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(7.73)	(\$1,059.58)	10/19/2023 2:55:53 PM
10/19/2023 6:46:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	4.73	\$648.58	10/19/2023 2:55:52 PM
10/19/2023 6:46:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	8.12	\$1,112.10	10/19/2023 2:53:09 PM
10/19/2023 6:46:04 AM	03-052-000	REPAIR REPL ELECTRICAL ACC SYSTEM	(8.12)	(\$1,112.10)	10/19/2023 2:55:22 PM
10/19/2023 7:39:45 AM	14-320	INSTALL UNDERCARRIAGE	(6.33)	(\$867.44)	10/20/2023 6:44:14 AM
10/19/2023 7:39:45 AM	14-320	INSTALL UNDERCARRIAGE	3.84	\$525.74	10/20/2023 6:44:13 AM
10/19/2023 7:39:45 AM	14-320	INSTALL UNDERCARRIAGE	6.33	\$867.44	10/19/2023 1:59:36 PM
10/19/2023 12:00:00 PM	14-320	INSTALL UNDERCARRIAGE	2.00	\$274.00	10/20/2023 6:46:53 AM
10/19/2023 12:00:00 PM	03-028	REPAIR REPL POWERTRAIN	3.00	\$411.27	10/19/2023 2:55:22 PM
10/19/2023 12:04:53 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.00	\$410.43	10/19/2023 3:04:38 PM
10/19/2023 2:00:09 PM	14-320	INSTALL UNDERCARRIAGE	0.98	\$134.26	10/19/2023 2:58:54 PM
10/20/2023 7:06:12 AM	03-028	REPAIR REPL POWERTRAIN	4.41	\$604.09	10/20/2023 2:55:54 PM
10/20/2023 7:06:12 AM	03-028	REPAIR REPL POWERTRAIN	7.79	\$1,067.61	10/20/2023 2:53:50 PM
10/20/2023 7:06:12 AM	03-028	REPAIR REPL POWERTRAIN	(7.79)	(\$1,067.61)	10/20/2023 2:55:54 PM
10/20/2023 7:18:57 AM	12-008-A00	REFINISH ASSEMBLY	1.09	\$149.44	10/20/2023 8:24:24 AM
10/20/2023 7:29:46 AM	14-320	INSTALL UNDERCARRIAGE	4.68	\$641.27	10/20/2023 12:10:37 PM
10/20/2023 12:00:14 PM	03-028	REPAIR REPL POWERTRAIN	2.91	\$398.10	10/20/2023 2:55:54 PM
10/20/2023 12:00:14 PM	03-028	REPAIR REPL POWERTRAIN	(2.91)	(\$398.10)	10/20/2023 2:56:17 PM
10/20/2023 12:00:14 PM	03-028	REPAIR REPL POWERTRAIN	2.97	\$407.23	10/20/2023 2:56:16 PM
10/20/2023 2:54:14 PM	03-028	REPAIR REPL POWERTRAIN	0.01	\$0.80	10/20/2023 2:54:45 PM
10/20/2023 2:54:14 PM	03-028	REPAIR REPL POWERTRAIN	(0.01)	(\$0.80)	10/20/2023 2:55:54 PM
10/23/2023 6:41:06 AM	03-103-F1S	REPAIR REPL SAFETY EQUIPMENT	3.70	\$506.67	10/23/2023 2:57:25 PM

s.22(1)	10/23/2023 7:01:06 AM	03-103-F1S	REPAIR REPL SAFETYEQUIPMENT	3.37	\$461.01	10/23/2023 10:23:01 AM
	10/23/2023 7:01:06 AM	03-103-F1S	REPAIR REPL SAFETYEQUIPMENT	(3.37)	(\$461.01)	10/23/2023 2:57:26 PM
	10/23/2023 7:10:26 AM	12-008-A00	REFINISH ASSEMBLY	0.82	\$112.91	10/23/2023 7:59:53 AM
	10/23/2023 7:40:00 AM	03-032-B00	REPAIR REPL BATTERY	0.17	\$22.83	10/24/2023 8:37:44 AM
	10/24/2023 6:28:18 AM	03-032-B00	REPAIR REPL BATTERY	0.68	\$92.86	10/24/2023 7:08:59 AM
	10/24/2023 6:28:18 AM	03-032-B00	REPAIR REPL BATTERY	(0.68)	(\$92.86)	10/24/2023 2:45:13 PM
	10/24/2023 6:30:00 AM	03-032-B00	REPAIR REPL BATTERY	0.65	\$88.97	10/24/2023 2:45:12 PM
	10/25/2023 9:19:17 AM	03-010-B49	REPAIR REPL MISC BRACKETS	5.31	\$727.74	10/25/2023 2:38:01 PM
	10/26/2023 7:26:52 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.30	\$40.64	10/26/2023 7:44:40 AM
	10/28/2023 10:02:12 AM	02-000	CLEAN UNIT SERVICES	3.00	\$411.57	10/28/2023 3:58:25 PM
	10/28/2023 10:02:12 AM	02-000	CLEAN UNIT SERVICES	2.00	\$274.57	10/28/2023 1:04:50 PM
	10/28/2023 10:02:12 AM	02-000	CLEAN UNIT SERVICES	(2.00)	(\$274.57)	10/28/2023 3:58:25 PM
	10/28/2023 1:02:12 PM	02-000	CLEAN UNIT SERVICES	0.00	\$0.57	10/28/2023 1:02:28 PM
	10/28/2023 1:02:12 PM	02-000	CLEAN UNIT SERVICES	0.00	(\$0.57)	10/28/2023 1:04:50 PM
	11/12/2023 7:55:29 AM	08-028	OVERHAUL POWERTRAIN	10.04	\$1,375.52	11/12/2023 5:57:55 PM
	11/15/2023 3:42:27 PM	08-028	OVERHAUL POWERTRAIN	4.92	\$674.69	11/15/2023 8:37:58 PM
	11/15/2023 9:03:14 PM	08-028	OVERHAUL POWERTRAIN	1.45	\$198.54	11/15/2023 10:31:42 PM
	11/19/2023 7:40:41 AM	08-028	OVERHAUL POWERTRAIN	10.22	\$1,399.91	11/19/2023 5:53:48 PM
	11/20/2023 10:22:52 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.83	\$250.67	11/21/2023 12:12:40 AM
	11/21/2023 6:01:30 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.98	\$271.41	11/21/2023 8:00:23 PM
	11/21/2023 8:30:14 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.96	\$542.06	11/22/2023 12:28:27 AM
	11/21/2023 8:36:14 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.86	\$528.36	11/22/2023 12:27:39 AM
	11/21/2023 8:36:14 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.86)	(\$528.36)	11/22/2023 12:28:28 AM
	11/22/2023 5:07:10 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.90	\$396.88	11/22/2023 8:01:00 PM
11/22/2023 9:01:19 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.25	\$445.71	11/23/2023 12:16:32 AM	
11/23/2023 3:51:14 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	4.22	\$578.18	11/23/2023 8:04:31 PM	
11/23/2023 8:33:15 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.77	\$516.34	11/24/2023 12:19:25 AM	
TOTAL			825.32	\$113,068.35		

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	GRK122235	SCREW, 5/16" X 6" GRK	100.00	\$192.39	7/11/2023 7:27:41 AM	
MANYAR	GRK122235	SCREW, 5/16" X 6" GRK	500.00	\$961.93	7/11/2023 7:27:41 AM	
MANYAR	5 803	S LICONE, BLACK	1.00	\$14.16	10/18/2023 7:40:22 AM	



MANYAR	53-391	LUBRICANT, METHYL HYDRATE	1.00	\$7.96	8/9/2023 9:15:59 AM
MANYAR	5861.112400	CLEANER, AIR INTAKE	2.00	\$35.92	8/9/2023 12:03:07 PM
MANYAR	ECO-FEE	ECO-FEE	8.00	\$1.81	10/12/2023 3:22:13 PM
MANYAR	751-0120	HINGE, PIANO 2" STAINLESS	2.00	\$191.96	7/20/2023 9:42:56 AM
MANYAR	CDAP1694	PAINT, SPRAY PRIMER RED	2.00	\$29.64	7/19/2023 3:18:39 PM
MANYAR	1676830	PAINT, SPRAY FLAT BLACK	2.00	\$36.33	7/19/2023 3:18:39 PM
MANYAR	555.9011G	TERMINAL, SHRINK #8 22-18GA	15.00	\$37.88	10/16/2023 2:37:18 PM
MANYAR	555.9021	TERMINAL, SHRINK #10 22-18GA	10.00	\$19.49	10/16/2023 2:37:19 PM
MANYAR	X115-A	ELOW, STREET 1/8 FPT X 1/8 NPT	1.00	\$2.88	10/13/2023 2:12:38 PM
MANYAR	68-2A	CONNECTOR, 1/8TUBE OD X 1/8MPT	2.00	\$3.25	10/13/2023 2:12:38 PM
MANYAR	1012B	PAINT, STEEL BLACK	1.00	\$56.98	9/26/2023 1:18:24 PM
MANYAR	751-0120	HINGE, PIANO 2" STAINLESS	1.00	\$95.98	10/18/2023 8:28:36 AM
MANYAR	26338	TAPE, MASKING 1-1/2"	1.00	\$13.67	10/18/2023 9:45:55 AM
MANYAR	26336	TAPE, MASKING 1"	1.00	\$14.62	10/18/2023 9:45:55 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$4.56	9/17/2023 9:26:51 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$252.56	9/17/2023 1:28:49 PM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$4,828.86	9/17/2023 1:28:49 PM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/17/2023 1:28:49 PM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/17/2023 1:28:50 PM
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$58.58	9/17/2023 1:28:50 PM
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$42.69	9/17/2023 1:28:50 PM
MANYAR	1022113-001	WASHER, AXLE	1.00	\$117.18	9/17/2023 1:28:50 PM
MANYAR	1023027-001	BAR, L-SPRING	8.00	\$313.87	9/17/2023 1:28:51 PM
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$470.90	9/17/2023 1:28:51 PM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$2.73	9/17/2023 1:28:51 PM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$11.11	9/17/2023 1:28:51 PM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$480.82	9/17/2023 1:28:51 PM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$702.53	9/17/2023 1:28:52 PM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$521.79	9/17/2023 1:28:52 PM
MANYAR	1022115-002	SPACER	1.00	\$42.36	9/17/2023 1:28:52 PM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 1:52:40 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 1:52:40 PM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	1.00	\$23.72	10/24/2023 1:52:41 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 1:54:24 PM

MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 1:54:25 PM
MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 1:54:25 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 1:55:33 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 1:55:33 PM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 1:57:25 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	3.00	\$523.52	10/24/2023 1:57:25 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 1:57:26 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	(5.00)	(\$8,602.00)	9/18/2023 8:47:57 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$7.34	9/17/2023 9:26:44 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	16.00	\$3.57	9/17/2023 9:26:44 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$5.36	9/17/2023 9:26:44 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.47	9/17/2023 9:26:45 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$9.77	9/17/2023 9:26:45 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$7.54	9/17/2023 9:26:45 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	8.00	\$3.77	9/17/2023 9:26:45 AM
MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,017.10	9/17/2023 9:26:45 AM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$137.49	9/17/2023 9:26:46 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$190.66	9/17/2023 9:26:46 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$780.70	9/17/2023 9:26:46 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$15.48	9/17/2023 9:26:46 AM
MANYAR	27207300	SPRING DIE, 1X2X4.5"FL (GREEN)	8.00	\$632.90	9/17/2023 9:26:47 AM
MANYAR	27207100	SPRING DIE, 1X2X4.5"FL (BLUE)	8.00	\$805.40	9/17/2023 9:26:47 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$154.68	9/17/2023 9:26:47 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$71.42	9/17/2023 9:26:47 AM
MANYAR	60766800	HHCS, 3/8-16X1 1/4 GR5 Z/P	8.00	\$2.78	9/17/2023 9:26:48 AM
MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$161.20	9/17/2023 9:26:48 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.08	9/17/2023 9:26:48 AM
MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	16.00	\$16.07	9/17/2023 9:26:48 AM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.07	9/17/2023 9:26:48 AM
MANYAR	68531800	WASHER, SAE 1/2 Z/P	1.00	\$0.19	9/17/2023 9:26:49 AM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	3.00	\$2.86	9/17/2023 9:26:49 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$89.13	9/17/2023 9:26:49 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$6.94	9/17/2023 9:26:49 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$7.14	9/17/2023 9:26:49 AM

MANYAR	20505200	BEARING CUP, 2.3125 OD	(16.00)	(\$752.93)	9/17/2023 9:30:07 AM
MANYAR	68531600	WASHER, FLAT 1/2 Z/P	2.00	\$0.17	9/17/2023 9:39:17 AM
MANYAR	68531600	WASHER, FLAT 1/2 Z/P	5.00	\$0.43	9/17/2023 9:39:17 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	4.00	\$3.82	9/17/2023 9:39:17 AM
MANYAR	36525	DISC, ROLOC GRINDING 2" 40G	3.00	\$12.46	9/20/2023 10:55:14 AM
MANYAR	11L313	WHEEL, CUTOFF ZIP 3X1/16X3/8	6.00	\$39.53	7/17/2023 10:10:12 AM
MANYAR	06B604	DISC, ENDURO FLEX 6INCH 40GR	2.00	\$62.73	7/17/2023 11:29:10 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$752.93	9/17/2023 9:30:08 AM
MANYAR	20934000	BRAKE SHOE, 1023124-000	16.00	\$248.79	9/17/2023 9:26:40 AM
MANYAR	25237700	PIN CLEVIS, 1/2X2 1/2 ZP	8.00	\$16.17	9/17/2023 9:26:40 AM
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$76.28	9/17/2023 9:26:41 AM
MANYAR	27207700	SPRING DIE, .75X1.5X4'FL BLUE	8.00	\$452.65	9/17/2023 9:26:41 AM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.79	9/17/2023 9:26:41 AM
MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$86.40	9/17/2023 9:26:41 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$0.97	9/17/2023 9:26:41 AM
MANYAR	60828800	HHCS, 1/2-20X2 1/2 GR5 Z/P	4.00	\$18.60	9/17/2023 9:26:42 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$7.64	9/17/2023 9:26:42 AM
MANYAR	60842800	HHCS, 1/2-13X2 1/2 GR5 Z/P	2.00	\$3.32	9/17/2023 9:26:42 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.39	9/17/2023 9:39:17 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	4.00	\$0.69	9/17/2023 9:39:17 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$0.89	9/17/2023 9:39:17 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,016.40	9/17/2023 9:39:18 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$2.78	9/17/2023 9:39:18 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$4.86	9/17/2023 9:39:18 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.39	9/17/2023 9:39:18 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$11.61	9/17/2023 9:39:18 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.39	9/17/2023 9:39:19 AM
MANYAR	64751600	NUT, HEX 1/2-13 FULL GR5	2.00	\$1.22	9/17/2023 9:26:42 AM
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$128.03	9/17/2023 9:26:42 AM
MANYAR	64773000	NUT, CASTLE HEX 1-14 GR5 Z/P	2.00	\$24.18	9/17/2023 9:26:43 AM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$119.34	9/17/2023 9:26:43 AM
MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$11.11	9/17/2023 9:26:43 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	12.00	\$2.08	9/17/2023 9:26:43 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$5.56	9/17/2023 9:26:44 AM

MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$4.86	9/17/2023 9:39:19 AM
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$356.82	9/17/2023 1:28:48 PM
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,060.55	9/17/2023 1:28:48 PM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	8.00	\$308.71	9/17/2023 1:28:49 PM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/17/2023 9:26:50 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$960.45	9/17/2023 1:46:33 PM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$689.24	9/17/2023 1:46:33 PM
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$399.88	9/17/2023 1:46:33 PM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,033.47	9/17/2023 1:46:33 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$8,602.00	9/18/2023 8:47:57 AM
MANYAR	1023119-001	ADJUSTER BODY	7.00	\$1,528.03	9/17/2023 1:46:34 PM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$136.45	9/17/2023 1:46:34 PM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$262.14	9/17/2023 1:46:34 PM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$610.82	9/17/2023 1:46:34 PM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$643.96	9/17/2023 1:46:35 PM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$494.71	9/17/2023 1:46:35 PM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/17/2023 9:26:50 AM
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$13.29	9/17/2023 10:49:22 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	4.00	\$0.69	9/17/2023 10:49:22 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/17/2023 10:49:22 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/17/2023 10:49:23 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	2.00	\$0.35	9/17/2023 10:49:23 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/17/2023 10:49:23 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/17/2023 10:49:23 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.08	9/17/2023 10:49:23 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$2.78	9/17/2023 10:49:24 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.39	9/17/2023 10:49:24 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/17/2023 10:49:24 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/17/2023 10:49:24 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/17/2023 9:26:50 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/17/2023 10:49:24 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.39	9/17/2023 10:49:25 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$254.05	9/17/2023 1:46:35 PM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$810.61	9/17/2023 1:46:35 PM

MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$810.61	9/17/2023 1:46:35 PM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$200.88	9/17/2023 1:46:36 PM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,338.41	9/17/2023 1:46:36 PM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.42	9/17/2023 9:26:50 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	1.00	\$1.60	9/27/2023 2:55:48 PM
MANYAR	CDAP1694	PAINT, SPRAY PRIMER RED	1.00	\$14.82	7/17/2023 2:09:26 PM
MANYAR	87538515	RETAINER	1.00	\$111.22	7/17/2023 5:25:20 PM
MANYAR	78193	TAPE, SAFETY WALK BLACK 6"x60'	12.00	\$48.81	7/19/2023 8:19:49 AM
MANYAR	13600LA-902A1	CONE, SEALED	8.00	\$627.95	10/12/2023 9:09:40 AM
MANYAR	D1NL-6584-B	GASKET, VALVE COVER	2.00	\$114.74	9/19/2023 7:49:24 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$85.49	9/19/2023 7:49:24 AM
MANYAR	C0NN-6701-A	SEAL, ENIGINE MAIN SEAL	2.00	\$115.54	9/19/2023 7:49:25 AM
MANYAR	EAF-6710-B	GASKET, ENGINE OIL PAN	2.00	\$90.86	9/19/2023 7:49:25 AM
MANYAR	D5JL-6589-A	GROMMET, VALVE COVER	4.00	\$19.95	9/19/2023 7:49:25 AM
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$34.57	9/17/2023 9:26:43 AM
MANYAR	550049545	FLUID, TRANSMISSION TYPE F	4.00	\$41.92	10/12/2023 10:36:58 AM
MANYAR	H175	HOSE, FUEL 1/4"	2.00	\$6.14	10/12/2023 12:35:20 PM
MANYAR	ECO-FEE	ECO-FEE	8.00	\$1.81	10/11/2023 2:45:13 PM
MANYAR	924BW/922PTMT-7	BOTTLE, SPRAY C/W HEAD	1.00	\$7.54	10/16/2023 6:54:48 AM
MANYAR	48-4A	CONNECTOR, 1/4TUBE OD X 1/8MPT	3.00	\$2.96	10/9/2023 2:30:40 PM
MANYAR	WRS220300	MATTING, RUBBER EDG 36"x 1/8"	5.00	\$43.29	10/20/2023 3:22:16 PM
MANYAR	02040	PAPER, SANDING WET&DRY 320	1.00	\$2.09	6/29/2023 10:58:15 AM
MANYAR	2007	PAPER, SANDING WET&DRY 220	1.00	\$2.40	6/29/2023 10:58:15 AM
MANYAR	4867BOX	PLUG, 3 PRONG MALE	1.00	\$5.42	10/11/2023 7:12:28 AM
MANYAR	99022	CONNECTOR	1.00	\$0.57	9/27/2023 11:05:05 AM
MANYAR	82305	GAUGE, OIL PRESURE	(1.00)	(\$111.48)	9/26/2023 1:59:46 PM
MANYAR	82306	GAUGE, WATER TEMPERATURE	(1.00)	(\$111.48)	9/26/2023 1:59:46 PM
MANYAR	280EA	SENDER, TEMPATURE	(1.00)	(\$67.88)	9/26/2023 1:59:46 PM
MANYAR	82309	GAUGE, VOLTAGE	1.00	\$146.92	9/15/2023 10:52:13 AM
MANYAR	82329	GAUGE	1.00	\$155.16	9/15/2023 10:52:17 AM
MANYAR	ST404	SOLENOID, FORD	1.00	\$57.30	9/15/2023 11:26:48 AM
MANYAR	SW83503	HOUR METER	1.00	\$203.31	9/15/2023 10:50:26 AM
MANYAR	VFV-12	VENT, AIR BLEED 1/8 NPT	4.00	\$142.34	10/3/2023 12:52:54 PM
MANYAR	SFF6N0.25BK-100	LOOM, SMARTFLEX 1/4"	1.00	\$161.89	9/21/2023 12:59:12 PM

MANYAR	H84709001	CONNECTOR, RELAY ISO WTHR/PRF	1.00	\$27.59	9/21/2023 1:13:06 PM
MANYAR	007794301	RELAY, WATERPROOF 12V 40A	1.00	\$16.88	9/21/2023 1:13:06 PM
MANYAR	BH360/1	BAR, HEX C360 BRASS	1.00	\$126.05	10/11/2023 9:53:09 AM
MANYAR	76-2314	LUG, BATTERY 4GA 3/8	6.00	\$17.07	9/18/2023 10:12:43 AM
MANYAR	76-2313	LUG, BATTERY 4GA 5/16	10.00	\$27.96	9/20/2023 3:16:02 PM
MANYAR	76-2314	LUG, BATTERY 4GA 3/8	10.00	\$28.46	9/20/2023 3:16:02 PM
MANYAR	76-2312	LUG, BATTERY 4GA 1/4	10.00	\$27.65	9/20/2023 3:16:02 PM
MANYAR	9411-5-11	SWITCH, ROCKER OVAL 20A RED	3.00	\$25.47	9/29/2023 8:22:13 AM
MANYAR	9411-5-11	SWITCH, ROCKER OVAL 20A RED	1.00	\$8.49	9/29/2023 7:58:35 AM
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.45	9/30/2023 7:00:17 AM
MANYAR	555.9122G	TERMINAL, SHRINK 3/8" 16-14GA	10.00	\$26.77	9/30/2023 1:33:05 PM
MANYAR	5141B	LOOM, SPLIT 3/8"	1.00	\$19.32	9/30/2023 1:55:21 PM
MANYAR	732410	WIRE, 16GA BLACK	1.00	\$52.12	9/30/2023 4:14:18 PM
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.45	9/30/2023 4:14:18 PM
MANYAR	68366P	GAUGE, HOUR METER	1.00	\$179.48	10/4/2023 12:52:51 PM
MANYAR	732602	WIRE, 12GA RED	100.00	\$111.45	9/22/2023 10:12:44 AM
MANYAR	732609	WIRE, 12GA WHITE	1.00	\$37.15	9/22/2023 10:12:45 AM
MANYAR	732610	WIRE, 12GA BLACK	95.00	\$167.13	9/22/2023 10:12:45 AM
MANYAR	732601	WIRE, 12GA BROWN	1.00	\$37.15	9/22/2023 10:12:46 AM
MANYAR	956-3125	SWITCH,IGNITION	1.00	\$62.71	10/6/2023 8:55:54 PM
MANYAR	813-0400-01	xpower digital 320watt,12volts	1.00	\$134.53	10/5/2023 12:08:35 PM
MANYAR	1676830	PAINT, SPRAY FLAT BLACK	1.00	\$18.17	10/5/2023 1:31:34 PM
MANYAR	7081PK	BASE, TIE STRAP	1.00	\$15.35	10/13/2023 12:32:07 PM
MANYAR	555.90522	TERMINAL, SHRINK PUSH-ON	40.00	\$67.13	9/25/2023 10:35:00 AM
MANYAR	279B-F	SENDER, OIL	(1.00)	(\$118.49)	10/31/2023 3:23:09 PM
MANYAR	82305	GAUGE, OIL PRESURE	1.00	\$111.48	9/26/2023 1:59:46 PM
MANYAR	82306	GAUGE, WATER TEMPERATURE	1.00	\$111.48	9/26/2023 1:59:47 PM
MANYAR	280EA	SENDER, TEMPATURE	1.00	\$67.88	9/26/2023 1:59:47 PM
MANYAR	01A018	DRILL BIT, 9/32 SST JOBBER	1.00	\$8.49	10/5/2023 10:11:05 AM
MANYAR	90930K	CLAMP, EXHAUST MUFFLER 2-1/8"	1.00	\$2.79	9/14/2023 12:46:40 PM
MANYAR	279B-F	SENDER, OIL	1.00	\$118.49	10/31/2023 3:23:10 PM
MANYAR	410A	PAINT, PRIMER ETCH GREY 1K	1.00	\$74.26	9/14/2023 2:47:18 PM
MANYAR	01411	DISC, ROLOC GRINDING P120 3"	2.00	\$12.36	9/20/2023 10:58:21 AM
MANYAR	ET10	CLAMP, HOSE 23/32" - 1"	1.00	\$2.48	9/5/2023 11:57:45 AM

MANYAR	25-9415	BELT, FAN	1.00	\$28.01	9/5/2023 5:17:15 PM
MANYAR	25-9412	BELT, V-BELT 41"	1.00	\$29.16	9/5/2023 5:17:15 PM
MANYAR	1315-200	SEPARATOR, ISOLATION RELAY	1.00	\$256.22	10/24/2023 6:42:55 AM
MANYAR	HP51R	BATTERY,GRP 51R 500CCA 12V	1.00	\$179.34	10/24/2023 6:40:09 AM
MANYAR	BMCA14	CAP, PIPE 1/4"	2.00	\$3.21	6/30/2023 12:38:28 PM
MANYAR	3212	SPARK PLUG, B-6L	4.00	\$16.24	6/28/2023 12:21:27 PM
MANYAR	D104	ROTOR, IGNITION - STANDARD	1.00	\$27.45	6/28/2023 12:21:28 PM
MANYAR	C278	CAP, DISTRIBUTOR IGNITION	1.00	\$132.63	6/28/2023 12:21:28 PM
MANYAR	40511	COIL, FLAME THROWER	1.00	\$97.64	6/28/2023 12:21:28 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$962.92	9/18/2023 8:52:09 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,404.03	9/18/2023 8:52:09 AM
MANYAR	LM2038	FLUID, OIL ENG 5W30 SYNTHETIC	5.00	\$102.54	6/30/2023 10:33:41 AM
MANYAR	AL-AA	BATTERY, AA ALKALINE	4.00	\$4.29	10/11/2023 2:16:12 PM
MANYAR	BV4103B	VALVE, BALL BRASS 1/4"	1.00	\$9.34	7/14/2023 2:32:52 PM
MANYAR	X124-B	ELOW, STREET45 1/4FPT X 1/4NPT	1.00	\$4.42	7/14/2023 2:32:54 PM
MANYAR	STNIP025300	NIPPLE, PIPE 1/4 X 3	1.00	\$3.42	7/14/2023 2:32:55 PM
MANYAR	122-B	NIPPLE, 1/4NPT X 1-3/8"L HEX	2.00	\$3.88	7/14/2023 2:32:57 PM
MANYAR	103-B	COUPLING, BRASS 1/4" FPT	1.00	\$4.69	7/14/2023 2:32:59 PM
MANYAR	325-10C	FITTING, BAR 5/8 X 38 MPT	3.00	\$15.13	9/6/2023 6:50:11 PM
MANYAR	325-10D	FITTING, FUEL 5/8H-1/2MPT BARB	2.00	\$10.22	9/14/2023 10:48:21 AM
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	1.00	\$8.47	8/24/2023 1:18:12 PM
MANYAR	ACD24238L	HOSE, HEATER	1.00	\$28.79	8/23/2023 1:14:27 PM
MANYAR	WEX42216	CONNECTOR, PIPE-FLEX	1.00	\$37.19	8/23/2023 1:14:27 PM
MANYAR	G388-150	HOSE, SOFTWALL EXHAUST-COOLANT	10.00	\$74.30	8/23/2023 1:16:05 PM
MANYAR	GAT24224IN	HOSE, RAD	36.00	\$82.92	8/23/2023 1:15:18 PM
MANYAR	S778	COUPLING, MALE AIR 1/4 NPT FEM	2.00	\$10.89	7/14/2023 2:52:36 PM
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	2.00	\$3.26	7/14/2023 2:52:38 PM
MANYAR	H130	HOSE, HEATER 5/8"	6.00	\$31.58	8/29/2023 11:25:04 AM
MANYAR	ET10	CLAMP, HOSE 23/32" - 1"	4.00	\$9.93	8/29/2023 11:25:07 AM
MANYAR	H504	HOSE, HEATER SILICONE 5/8"	3.00	\$47.37	8/29/2023 11:42:47 AM
MANYAR	X107-C	TEE,3/8 BRASS	3.00	\$18.51	8/25/2023 1:13:41 PM
MANYAR	203102-16-16	TEE, JIC ADAPTER	1.00	\$35.05	9/5/2023 7:26:21 AM
MANYAR	339-10C	BARB, 3/8 BRASS	1.00	\$17.66	8/24/2023 5:59:41 PM
MANYAR	93206	SEALANT, SILICONE RED GASKET	1.00	\$85.30	8/30/2023 1:49:14 PM

MANYAR	59703	SILICONE, ULTRA COPPER	1.00	\$11.89	8/30/2023 1:49:15 PM
MANYAR	121-B	PLUG, HEX HEAD 1/4" NPT	1.00	\$1.45	7/19/2023 7:26:27 AM
MANYAR	8037082	CTRL, TEMP 195 N/O	2.00	\$212.05	8/28/2023 6:04:53 PM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$46.44	8/28/2023 6:04:53 PM
MANYAR	325-10D	FITTING, FUEL 5/8H-1/2MPT BARB	(2.00)	(\$10.22)	9/14/2023 10:48:20 AM
MANYAR	35398	HANGER, EXHAUST TAIL PIPE	2.00	\$7.80	9/12/2023 2:44:37 PM
MANYAR	01A012	DRILL BIT, 3/16 SST JOBBER	1.00	\$4.87	7/25/2023 2:24:16 PM
MANYAR	CSP117	PAINT, SPRAY ALUM HIGH HEAT	1.00	\$26.19	9/12/2023 1:02:47 PM
MANYAR	CUSTOM HOSE	CUSTOM HOSE	1.00	\$44.49	7/31/2023 1:06:16 PM
MANYAR	CUSTOM HOSE	CUSTOM HOSE	1.00	\$53.74	7/31/2023 1:06:17 PM
MANYAR	CUSTOM HOSE	CUSTOM HOSE	1.00	\$33.43	7/31/2023 1:06:17 PM
MANYAR	G1414-06-06	BRASS SAE UNION	1.00	\$1.46	7/31/2023 1:06:17 PM
MANYAR	705-1233	CLAMP, HOSE 1 1/16 - 2 IN	8.00	\$20.26	8/23/2023 10:56:17 AM
MANYAR	HS28	CLAMP, HOSE 1-5/16" - 2-1/4"	1.00	\$1.43	8/23/2023 10:56:20 AM
MANYAR	HS32	CLAMP, HOSE 1-9/16" - 2-1/2"	3.00	\$3.86	8/23/2023 10:56:22 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	4.00	\$6.26	10/27/2023 8:30:09 AM
MANYAR	06197	TAPE, TEFLON 1/2X60	1.00	\$4.76	9/12/2023 8:32:43 AM
MANYAR	V2176-838	PAINT, SPRAY HI-HEAT FLT/BLK	2.00	\$53.49	7/26/2023 2:25:01 PM
MANYAR	76-2312	LUG, BATTERY 4GA 1/4	4.00	\$11.06	9/18/2023 3:28:19 PM
MANYAR	4327	GAUGE, OIL PRESSURE	1.00	\$195.67	9/23/2023 10:54:41 AM
MANYAR	36525	DISC, ROLOC GRINDING 2" 40G	4.00	\$16.62	9/13/2023 12:06:18 PM
MANYAR	SS-400-3	FITTING, UNION TEE	2.00	\$215.50	9/28/2023 1:42:35 PM
MANYAR	SS-400-2-2	FITTING, ELBOW	4.00	\$182.03	9/28/2023 1:42:35 PM
MANYAR	SS-400-4-4TTF	FITTING, TEE	1.00	\$125.25	12/5/2023 9:55:31 AM
MANYAR	SS-400-4-4TTF	FITTING, TEE	(1.00)	(\$125.25)	12/5/2023 9:55:30 AM
MANYAR	4337	GAUGE, WATER TEMP	1.00	\$141.97	9/20/2023 2:31:23 PM
MANYAR	4347	GAUGE, OIL TEMPERATURE	1.00	\$139.31	9/20/2023 2:31:23 PM
MANYAR	4320	GAUGE, AIR PRESSURE	1.00	\$165.61	9/20/2023 2:31:23 PM
MANYAR	4391	GAUGE, VOLTAGE	1.00	\$124.51	9/20/2023 2:31:24 PM
MANYAR	8347484	GAUGE, WET 1/4 NPT BM 100PSI	1.00	\$30.47	9/20/2023 3:16:01 PM
MANYAR	TUBE 1/4 X .035 SST316	TUBING, HYD 1/4"X.035" S.S.	60.00	\$231.66	11/15/2023 4:16:32 PM
MANYAR	84-9311PK	TERM, STUD LOCKING 5 PK	2.00	\$94.13	9/29/2023 11:43:29 AM
MANYAR	TUBE 1/4 X .035 SST316	TUBING, HYD 1/4"X.035" S.S.	20.00	\$77.22	9/19/2023 7:53:13 PM
MANYAR	13C058	WHEEL, WIRE STRAIGHT BRUSHES	1.00	\$30.39	9/13/2023 2:07:27 PM



MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$24.30	12/5/2023 10:02:27 AM
MANYAR	SS-400-4-4TTF	FITTING, TEE	1.00	\$125.25	12/5/2023 10:02:28 AM
MANYAR	557.12128	TERMINAL, BATTERY 4GA NEG	1.00	\$14.04	9/21/2023 8:22:09 AM
MANYAR	557.1213	TERMINAL, BATTERY POS 4GA	1.00	\$10.94	9/21/2023 8:22:09 AM
MANYAR	705-1233	CLAMP, HOSE 1 1/16 - 2 IN	7.00	\$13.76	8/28/2023 6:38:54 AM
MANYAR	24232	HOSE, RADIATOR 2"	4.00	\$10.90	8/28/2023 6:38:54 AM
MANYAR	550049545	FLUID, TRANSMISSION TYPE F	4.00	\$42.83	9/12/2023 10:45:16 AM
MANYAR	01CP-16	FITTING, HYDRAULIC 01CP-16	2.00	\$21.38	9/12/2023 11:49:34 AM
MANYAR	01HP-06	FITTING, HYDRAULIC 01HP-06	1.00	\$3.14	9/12/2023 11:49:37 AM
MANYAR	55640	TAP, BOTTOMING 5/8-11 HCS	2.00	\$53.12	8/1/2023 11:02:39 AM
MANYAR	06197	TAPE, TEFLON 1/2X60	1.00	\$4.76	9/25/2023 9:59:12 AM
MANYAR	76-2282PK	LUG, 8GA COPPER 20PK	1.00	\$22.26	9/19/2023 5:49:25 PM
MANYAR	76-2283PK	LUG, 8GA COPPER 20PK	1.00	\$22.26	9/19/2023 5:49:25 PM
MANYAR	41001	ELBOW, EXHAUST 2.00"	1.00	\$13.71	7/25/2023 2:51:44 PM
MANYAR	325-5A	PIPE, MALE 5/16 ID X 1/8 MPT	4.00	\$6.72	8/28/2023 12:12:29 PM
MANYAR	X115-A	ELOW, STREET 1/8 FPT X 1/8 NPT	4.00	\$11.53	8/28/2023 12:12:29 PM
MANYAR	X124-A	ELOW, STREET45 1/8FPT X 1/8NPT	4.00	\$10.03	8/28/2023 12:12:30 PM
MANYAR	33008	THERMOSTAT, 180 DEGREE	2.00	\$16.93	8/25/2023 5:14:17 PM
MANYAR	R12T	FILTER, FUEL R12T	1.00	\$38.11	8/24/2023 2:44:49 PM
MANYAR	122-B	NIPPLE, 1/4NPT X 1-3/8"L HEX	3.00	\$5.82	9/11/2023 1:51:36 PM
MANYAR	240-A	VALVE, BACK SEATING 1/8" PIPE	2.00	\$4.28	9/11/2023 1:51:36 PM
MANYAR	90SRWL-200	ELBOW, SHORT RADIUS 2 WELD	1.00	\$9.67	8/24/2023 4:14:43 PM
MANYAR	90RWL-200	ELBOW, LONG RAD 2 WELD	1.00	\$10.63	8/24/2023 4:14:46 PM
MANYAR	33200	CLAMP, EXHAUST MUFFLER 2"	2.00	\$6.99	9/8/2023 10:30:17 AM
MANYAR	18107	GASKET, TRANSMISSION	1.00	\$13.33	9/8/2023 4:51:09 PM
MANYAR	59803	SILICONE, BLACK	1.00	\$13.85	9/10/2023 6:34:05 AM
MANYAR	7-7	GASKET, EXHAUST MR GASKET 77	2.00	\$50.95	9/8/2023 9:52:49 AM
MANYAR	90LRWL-200	ELBOW , RAD LONG WELD 2"	2.00	\$21.25	9/7/2023 3:55:04 PM
MANYAR	90SRWL-200	ELBOW, SHORT RADIUS 2 WELD	2.00	\$19.34	9/7/2023 3:55:05 PM
MANYAR	2087068	SEALANT, PIPE THREAD 6 ML	1.00	\$15.69	9/22/2023 7:04:26 AM
MANYAR	121-D	PLUG, HEX HEAD 1/2" NPT	3.00	\$11.02	9/22/2023 7:02:14 AM
MANYAR	325-10D	FITTING, FUEL 5/8H-1/2MPT BARB	2.00	\$10.23	9/6/2023 6:52:37 PM
MANYAR	51025	CONNECTOR, FLEX 2" EXHAUST	1.00	\$29.98	8/25/2023 5:24:24 PM
MANYAR	H176	HOSE, FUEL 5/16"	12.00	\$41.79	8/25/2023 10:01:24 AM

MANYAR	ETM4	CLAMP, HOSE 5/16" - 9/16"	6.00	\$12.08	8/25/2023 10:01:26 AM
MANYAR	H504	HOSE, HEATER SILICONE 5/8"	8.00	\$126.32	8/29/2023 12:22:52 PM
MANYAR	924BW/922PTMT-7	BOTTLE, SPRAY C/W HEAD	1.00	\$7.54	10/20/2023 8:44:11 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$92.58	9/15/2023 1:25:07 PM
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:08 PM
MANYAR	4TF005	FLUID, ASPEN FUEL 4 CYCLE	2.00	\$92.74	8/28/2023 2:35:45 PM
MANYAR	17420	BELT	(1.00)	(\$34.24)	9/26/2023 2:58:47 PM
MANYAR	17425	BELT	(1.00)	(\$32.16)	9/26/2023 2:58:47 PM
MANYAR	17420	BELT	1.00	\$34.24	9/26/2023 2:58:48 PM
MANYAR	17425	BELT	1.00	\$32.16	9/26/2023 2:58:48 PM
MANYAR	MS466P	BEARING, MAIN BEARING SET(STD)	1.00	\$149.17	9/19/2023 7:48:06 AM
MANYAR	103-B	COUPLING, BRASS 1/4" FPT	4.00	\$18.76	7/4/2023 1:19:30 PM
MANYAR	103-C	COUPLING, BRASS 3/8" FPT	2.00	\$9.08	7/4/2023 1:19:31 PM
MANYAR	120-CB	ADAPTER, 3/8" FPT X 1/4" NPT	2.00	\$6.08	7/4/2023 1:27:11 PM
MANYAR	110-BA	BUSHING, 1/4"NPT X 1/8 "FPT	1.00	\$1.30	6/29/2023 9:15:16 AM
MANYAR	48-4A	CONNECTOR, 1/4TUBE OD X 1/8MPT	1.00	\$0.99	6/29/2023 9:15:16 AM
MANYAR	5559PF-L	GLOVES, GREEN MONKEY LARGE	2.00	\$61.96	7/4/2023 1:46:46 PM
MANYAR	284358N	GOVERNOR, D2 HIGH TEMPERATURE	1.00	\$112.44	6/21/2023 8:09:06 AM
MANYAR	49-4A	ELBOW, 90 1/4TUBE OD X 1/8 MPT	2.00	\$4.90	6/21/2023 9:38:33 AM
MANYAR	48-4A	CONNECTOR, 1/4TUBE OD X 1/8MPT	2.00	\$1.97	6/21/2023 9:38:33 AM
MANYAR	725-6B	FITTING, 3/8ID X 1/4MPT BRASS	5.00	\$15.66	7/5/2023 9:58:01 AM
MANYAR	X115-A	ELOW, STREET 1/8 FPT X 1/8 NPT	2.00	\$5.77	7/5/2023 9:58:01 AM
MANYAR	X115-B	ELOW, STREET 1/4 FPT X 1/4 NPT	2.00	\$9.97	7/5/2023 9:58:01 AM
MANYAR	48-6C	CONNECTOR, 3/8T X 3/8 MPT	4.00	\$7.59	6/21/2023 12:05:32 PM
MANYAR	49-6B	FITTING, 3/8FLARE X 1/4MPT 90	2.00	\$6.77	6/21/2023 11:19:34 AM
MANYAR	48-6B	CONNECTOR, 3/8TUBE OD X 1/4MPT	2.00	\$3.45	6/21/2023 11:19:34 AM
MANYAR	027728-66	FITTING, BARB 3/8 X 3/8F	3.00	\$13.37	6/21/2023 2:20:20 PM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	10.00	\$59.71	6/21/2023 2:32:23 PM
MANYAR	33200	CLAMP, EXHAUST MUFFLER 2"	1.00	\$3.50	8/21/2023 2:03:18 PM
MANYAR	84-9140PK	COVER, TERM BLACK 1/2GA	6.00	\$120.44	10/20/2023 12:49:08 PM
MANYAR	84-9141PK	COVER, 1/2 GA RED	4.00	\$80.30	10/20/2023 12:49:09 PM
MANYAR	BP194LED	BULB, MINI LED INTERIOR WHITE	6.00	\$147.51	10/20/2023 12:49:11 PM
MANYAR	165BK4A	TAPE, ELECTRICAL 3/4X66'	4.00	\$10.56	10/3/2023 12:45:43 PM
MANYAR	DCT4X25	TUBING, COPPER SOFT 1/4	1.00	\$2.80	10/5/2023 7:47:24 AM

MANYAR	RF30171	BLOCK, UPRIGHT LEAD	4.00	\$230.86	10/17/2023 10:54:55 AM
MANYAR	84-9141PK	COVER, 1/2 GA RED	2.00	\$40.15	10/25/2023 7:18:38 PM
MANYAR	BP194LED	BULB, MINI LED INTERIOR WHITE	2.00	\$49.17	10/25/2023 7:18:38 PM
MANYAR	623-4566	TRIM, EDGE 25' ROLL	1.00	\$110.12	10/23/2023 6:05:33 PM
MANYAR	01A017	DRILL BIT, 17/64 SST JOBBER	1.00	\$6.98	10/3/2023 1:09:32 PM
MANYAR	01A016	DRILL BIT, 1/4 SST JOBBER	1.00	\$7.25	10/3/2023 1:09:33 PM
MANYAR	82-2150	SWITCH, IGNITION 30A	1.00	\$30.50	10/3/2023 1:30:34 PM
MANYAR	122-A	NIPPLE, HEX 1/8" NPT	2.00	\$2.08	10/17/2023 10:53:44 AM
MANYAR	01A020	DRILL BIT, 5/16 SST JOBBER	1.00	\$8.88	10/4/2023 12:34:08 PM
MANYAR	92-600-9	GLOVES, NITRILE POWDER FREE L	2.00	\$44.88	10/17/2023 9:36:13 AM
MANYAR	555.9092G	TERMINAL, SHRINK #10 16-14GA	20.00	\$36.78	10/4/2023 10:40:12 AM
MANYAR	83-6001B	TIE STRAP, MINIATURE NYLON 4"	1.00	\$4.13	10/6/2023 2:13:56 PM
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.45	10/6/2023 2:13:56 PM
MANYAR	7964-14	SOCKET, SOLID CONTACT 16-14AWG	3.00	\$107.20	10/5/2023 12:08:35 PM
MANYAR	9411-5-11	SWITCH, ROCKER OVAL 20A RED	2.00	\$16.99	10/6/2023 2:13:48 PM
MANYAR	ECO-FEE	ECO-FEE	1.00	\$3.32	9/22/2023 2:48:35 PM
MANYAR	TVMAFU000082	MS-RA70 MARINE RADIO	1.00	\$490.85	9/22/2023 2:48:35 PM
MANYAR	AGU40	FUSE, 40A 10PCK	1.00	\$14.86	10/4/2023 4:11:16 PM
MANYAR	WFHAGU	HOLDER, FUSE 4-8GA 10PCK	1.00	\$50.16	10/4/2023 4:11:17 PM
MANYAR	CDAP1694	PAINT, SPRAY PRIMER RED	1.00	\$14.82	7/12/2023 12:53:34 PM
MANYAR	1021347-001	WHISTLE, FOR CP HUNTING TRAIN	1.00	\$2,006.20	9/26/2023 6:41:33 AM
MANYAR	58310	WIPES, HAND WATERLESS	1.00	\$16.62	6/29/2023 2:22:17 PM
MANYAR	121-C	PLUG, HEX HEAD 3/8" NPT	3.00	\$5.74	6/29/2023 1:45:46 PM
MANYAR	121-B	PLUG, HEX HEAD 1/4" NPT	2.00	\$2.89	6/29/2023 1:45:46 PM
MANYAR	WIREFY-ICD-B	DIE, B	1.00	\$31.20	10/27/2023 6:45:29 AM
MANYAR	WIREFY-ICD-B1	DIE, B1	1.00	\$31.20	10/27/2023 6:45:31 AM
MANYAR	WIREFY-ICD-A4	DIE, A4	1.00	\$31.20	10/27/2023 6:45:33 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	1.00	\$1.56	10/25/2023 2:35:51 PM
MANYAR	B402	EXTINGUISHER, FIRE ABC- 5LBS	1.00	\$31.56	10/23/2023 11:45:08 AM
MANYAR	STFA860	BRACKET, FIRE EXTINGUISHER	1.00	\$83.55	10/23/2023 11:45:12 AM
MANYAR	6237937	WEATHERSTRIP, 5/16 X 3/4	5.00	\$2.63	10/23/2023 11:45:17 AM
MANYAR	6237694	WEATHERSTRIP, 3/4 X 1/8	5.00	\$1.04	10/23/2023 11:45:22 AM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	2.00	\$3.14	10/26/2023 10:10:09 AM
MANYAR	6237694	WEATHERSTRIP, 3/4 X 1/8	50.00	\$10.35	10/25/2023 6:44:55 AM

MANYAR	CUSTOM HOSE	CUSTOM HOSE	2.00	\$74.60	6/21/2023 7:43:43 AM
MANYAR	G2016-06-06	FITTING	4.00	\$5.57	6/21/2023 7:43:43 AM
MANYAR	G2016-04-04	FITTING, MNPT PUSH ON	4.00	\$4.33	6/21/2023 7:43:44 AM
MANYAR	G2016-06-04	FITTING, MNPT PUSH ON	4.00	\$7.43	6/21/2023 7:43:44 AM
MANYAR	G2004-06-06	FITTING,FSAE FLARE PUSH ON	4.00	\$6.10	6/21/2023 7:43:44 AM
MANYAR	G2004-04-04	FITTING, FSAE FLARE PUSH ON	4.00	\$4.33	6/21/2023 7:43:44 AM
MANYAR	MR4340HHR/2	STEEL, ROUND BAR 2" 4340	20.00	\$1,178.20	11/28/2023 10:28:55 AM
MANYAR	MR4340HHR/2	STEEL, ROUND BAR 2" 4340	(20.00)	(\$1,178.20)	11/28/2023 10:28:55 AM
MANYAR	MR4340HHR/2	STEEL, ROUND BAR 2" 4340	20.00	\$1,173.92	11/28/2023 10:39:20 AM
MANYAR	30761	DISC, SANDING CLEAN 6" 600GR	1.00	\$62.33	10/12/2023 11:05:39 AM
MANYAR	31483	DISC, SANDING CLEAN 6" 320GR	1.00	\$112.12	10/12/2023 11:05:40 AM
MANYAR	31374	DISC, SANDING HOOKIT 6" 180GR	1.00	\$116.10	10/13/2023 12:15:51 PM
MANYAR	13196	FILE, SQUARE BASTARD 10"	1.00	\$19.69	10/12/2023 2:52:24 PM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	20.00	\$119.41	6/30/2023 1:10:21 PM
MANYAR	801-4-GRA-RL	HOSE, PUSH-LOK	5.00	\$24.40	6/20/2023 2:29:23 PM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	5.00	\$29.86	6/20/2023 2:29:23 PM
MANYAR	9424776	GAUGE, DRY 1/4 NPT BM 100 PSI	1.00	\$23.24	6/30/2023 1:56:51 PM
MANYAR	AL-AA	BATTERY, AA ALKALINE	4.00	\$3.78	6/22/2023 2:02:52 PM
MANYAR	X115-B	ELOW, STREET 1/4 FPT X 1/4 NPT	2.00	\$9.97	6/22/2023 1:53:24 PM
MANYAR	92-600-7	GLOVES, NITRILE POWDER FREE S	1.00	\$24.79	6/22/2023 1:53:24 PM
MANYAR	51810-1310-111	ROPE, POLY 1/4"	10.00	\$0.57	6/20/2023 7:50:58 AM
MANYAR	259476	BELT, V 62.27" OD 62" ID	1.00	\$25.62	6/20/2023 9:37:10 AM
MANYAR	76-2760PK	CABLE TIES, ASSORTED PACK	1.00	\$205.96	6/22/2023 2:58:19 PM
MANYAR	5139F	LOOM, 5/8 (50 FT ROLL)	1.00	\$36.18	6/22/2023 9:40:14 AM
MANYAR	X115-C	ELOW, STREET 3/8 FPT X 3/8 NPT	1.00	\$6.86	6/22/2023 10:18:04 AM
MANYAR	792430-6	BLADE, JIG-SAW 8T/IN	1.00	\$20.32	7/7/2023 11:09:10 AM
MANYAR	PPS2050	PLYWOOD, 11MM(1/2) G2S	64.00	\$335.97	7/11/2023 1:51:57 PM
MANYAR	CLASSIC HEM 36" SPNDL	SPINDLE, CLASSIC HEM 36"	9.00	\$129.68	10/6/2023 9:41:39 AM
MANYAR	83363K01	PAINT, ANTI-SKID CLEAR	1.00	\$208.36	7/19/2023 7:57:46 AM
MANYAR	62721	ROLLER, 240 MM X 10 MM	1.00	\$6.60	7/19/2023 7:57:46 AM
MANYAR	4391	NOZZLE, BRN MIG GUN 300 AMP	1.00	\$12.54	7/20/2023 7:31:42 AM
MANYAR	890.914	SEALANT, SILICONE CLEAR	1.00	\$60.80	7/20/2023 7:31:43 AM
MANYAR	64752400	NUT, HEX 5/8-11 FULL G5 Z/P	6.00	\$4.08	11/29/2023 11:13:18 PM
MANYAR	64805600	NUT, FLEXLOC 3/4-10 FULL	4.00	\$70.61	11/29/2023 11:13:19 PM

MANYAR	68538200	WASHER, LOCK 5/8 MED SPRING	6.00	\$4.08	11/29/2023 11:13:20 PM
MANYAR	1020340	BAR, DRAW	1.00	\$490.54	11/29/2023 11:13:14 PM
MANYAR	1026111-002	HITCHBAR, COACH	3.00	\$1,044.51	11/29/2023 11:13:15 PM
MANYAR	1026112-001	PLATE-HITCH SPL SPLICE	2.00	\$120.83	11/29/2023 11:13:16 PM
MANYAR	60910600	BOLT, HHCS 5/8-11X1 3/4 G5 Z/P	6.00	\$12.41	11/29/2023 11:13:16 PM
MANYAR	60952000	BOLT, 3/4X10X2 1/2 G5	4.00	\$20.00	11/29/2023 11:13:18 PM
MANYAR	121-D	PLUG, HEX HEAD 1/2" NPT	1.00	\$3.67	8/24/2023 1:18:09 PM
MANYAR	1515	FILTER, OIL 1515	1.00	\$10.28	8/10/2023 9:43:27 AM
MANYAR	DSHP13C12	FLUID, OIL DURON SHP 10W-30	4.00	\$26.27	8/10/2023 9:43:29 AM
MANYAR	121-D	PLUG, HEX HEAD 1/2" NPT	3.00	\$11.02	8/10/2023 12:42:12 PM
MANYAR	HSH/188	STEEL, PLATE MILD 3/16"	8.00	\$104.94	7/27/2023 1:52:57 PM
MANYAR	HSH/135	STEEL, SHEET HR 134 (10)	64.00	\$647.94	7/14/2023 1:23:04 PM
MANYAR	AF	Antifreeze	13.39	\$38.59	9/13/2023 1:00:45 AM
MANYAR	AF	Antifreeze	13.39	\$38.59	9/13/2023 1:00:46 AM
Total				\$69,227.78	

**Commercial**

Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Coast Powertrain Ltd	12/5/2023 9:48:28 AM	12-008-A00	REFINISH ASSEMBLY	\$2,103.92	12/5/2023 9:48:28 AM
CITY SHOP, CENTRAL STORES	7/19/2023 11:32:31 AM	14-CAR-X48	INSTALL CONSTRUCTION	\$802.47	7/19/2023 11:32:30 AM
City of Vancouver	10/23/2023 9:21:21 AM	03-032-B00	REPAIR REPL BATTERY	\$22.40	10/23/2023 9:21:21 AM
Surrey Radiators	10/19/2023 8:04:42 AM	03-042-R60	REPAIR REPL RADIATOR	\$535.50	10/19/2023 8:04:42 AM
Your Upholstery Service Ltd	10/10/2023 12:08:09 PM	03-002	REPAIR REPL CAB	\$828.80	10/10/2023 12:08:08 PM
Total				\$4,293.09	

**WO # 239670**

**Open Date** 11/24/2023 7:39:45 AM  
**Complete Date** 11/30/2023 12:43:20 PM  
**Close Date**

**Labor** \$4,151.40  
**Parts** \$103.46  
**Fluid** \$0.00  
**Commercial** \$0.00  
**Total** \$4,254.86

**Unit Number A7739**

Job Notes		
Job	Change Time	Note
INSPECT COMPLETE UNIT	11/24/2023 7:41:09 AM	inspect all tow bars, replace bolts, final checks for inspection
INSPECT COMPLETE UNIT	11/24/2023 2:17:44 PM	- replaced all carriage tow bar bolts to grade 8, torqued all to 105 ft. pounds - tightened up alternator belt on green train was loose - checked front diff oil in drive gear box, changed oil in diff. drive at front of green train - replaced leaking air coupler on green train - took train around on track tested operation working good .....591, 1042, 518
INSPECT COMPLETE UNIT	11/24/2023 2:20:05 PM	correction - all tow bar bolts changed to grade 5 as per Hedgehog recommendation
REPAIR REPL HOOK TOW	11/29/2023 7:14:36 AM	replace tow bar.....518, 1042,1075
REPAIR REPL HOOK TOW	11/30/2023 12:42:48 PM	new tow bar with new hardware done.....1042,518,1075

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	11/24/2023 6:30:00 AM	06-000-000	INSPECT COMPLETE UNIT	5.00	\$685.00	11/24/2023 1:45:52 PM
	11/24/2023 7:52:15 AM	06-000-000	INSPECT COMPLETE UNIT	7.06	\$966.69	11/24/2023 2:55:37 PM
	11/24/2023 8:16:51 AM	06-000-000	INSPECT COMPLETE UNIT	6.69	\$915.85	11/24/2023 2:57:58 PM
	11/28/2023 6:53:28 AM	06-000-000	INSPECT COMPLETE UNIT	2.68	\$366.55	11/28/2023 2:56:38 PM
	11/28/2023 7:23:28 AM	06-000-000	INSPECT COMPLETE UNIT	2.18	\$298.05	11/28/2023 9:34:01 AM
	11/28/2023 7:23:28 AM	06-000-000	INSPECT COMPLETE UNIT	(2.18)	(\$298.05)	11/28/2023 2:56:38 PM
	11/28/2023 7:45:19 AM	06-000-000	INSPECT COMPLETE UNIT	1.82	\$249.19	11/28/2023 9:34:28 AM
	11/29/2023 7:05:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	2.42	\$331.08	11/29/2023 7:17:27 AM
	11/29/2023 7:09:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	2.35	\$321.95	11/29/2023 7:17:26 AM
	11/29/2023 7:12:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	2.30	\$315.10	11/29/2023 7:17:26 AM
TOTAL				30.30	\$4,151.40	

**Materials**

Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.97	11/29/2023 10:13:35 AM
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	2.00	\$3.26	11/29/2023 10:13:35 AM
MANYAR	08K500	DISC, GRINDING 5 " X 1/4"X5/8"	1.00	\$8.87	11/28/2023 8:06:49 AM
MANYAR	06B506	DISC, ENDURO FLEX 5INCH 60GR	1.00	\$26.20	11/28/2023 8:06:50 AM
MANYAR	2087067	SEALANT, PIPE THREAD 50 ML	1.00	\$37.16	11/24/2023 8:27:12 AM
MANYAR	165BK4A	TAPE, ELECTRICAL 3/4X66'	1.00	\$2.64	11/24/2023 8:27:12 AM
MANYAR	AL-AA	BATTERY, AA ALKALINE	4.00	\$4.36	11/24/2023 8:27:12 AM
Total				\$103.46	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Total					

**WO # 240240**

**Open Date** 12/1/2023 6:47:12 AM

**Complete Date**

**Close Date**

**Labor** \$5,318.34

**Parts** \$509.03

**Fluid** \$0.00

**Commercial** \$0.00

**Total** \$5,827.37

**Unit Number A7739**

Job Notes		
Job	Change Time	Note
DIAGNOSE IGNITION SYSTEM	12/6/2023 1:13:14 PM	>LOAD UP TOOLS AND READJUSTED INGNITION TIMING .....518
REPAIR REPL ALTERNATOR	12/2/2023 12:42:48 PM	>replaced alternator pulley.....518
REPAIR REPL BELTS	12/1/2023 6:47:51 AM	belt squealing
REPAIR REPL BELTS	12/2/2023 6:43:20 AM	replaced pulley, replaced belt .....1027, 518
REPAIR REPL COOLING SYSTEM	12/2/2023 6:42:42 AM	coolant leak at filler neck on radiator
REPAIR REPL COOLING SYSTEM	12/2/2023 12:44:20 PM	>load up tools and went to stanley park, repaired radiator neck with compound.....518/689
REPAIR REPL TIMING CHAIN	12/6/2023 6:40:15 AM	adjust engine timing

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	12/1/2023 6:30:00 AM	03-031-B20	REPAIR REPL BELTS	8.00	\$1,096.00	12/1/2023 2:08:29 PM
	12/1/2023 6:55:58 AM	03-031-B20	REPAIR REPL BELTS	7.21	\$987.20	12/1/2023 2:08:21 PM
	12/1/2023 6:55:58 AM	03-031-B20	REPAIR REPL BELTS	(7.21)	(\$987.20)	12/1/2023 2:08:30 PM
	12/1/2023 7:03:39 AM	03-031-B20	REPAIR REPL BELTS	7.49	\$1,026.47	12/1/2023 2:33:13 PM
	12/1/2023 9:19:37 AM	03-031-B20	REPAIR REPL BELTS	3.47	\$475.31	12/1/2023 12:47:48 PM
	12/1/2023 12:00:00 PM	03-031-A00	REPAIR REPL ALTERNATOR	2.50	\$342.50	12/2/2023 12:42:03 PM
	12/2/2023 6:30:00 AM	03-042-000	REPAIR REPL COOLING SYSTEM	6.25	\$856.67	12/2/2023 4:55:32 PM
	12/2/2023 6:30:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	0.74	\$101.27	12/2/2023 7:15:04 AM
	12/2/2023 6:30:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	(0.74)	(\$101.27)	12/2/2023 12:42:04 PM
	12/2/2023 6:30:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	(5.50)	(\$752.85)	12/2/2023 4:55:33 PM
	12/2/2023 6:30:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	5.50	\$752.85	12/2/2023 12:42:03 PM
	12/2/2023 6:41:48 AM	03-042-000	REPAIR REPL COOLING SYSTEM	4.98	\$682.64	12/2/2023 11:40:48 AM
	12/2/2023 7:14:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	0.01	\$0.80	12/2/2023 7:14:45 AM



s.22(1)	12/2/2023 7:14:17 AM	03-042-000	REPAIR REPL COOLING SYSTEM	(0.01)	(\$0.80)	12/2/2023 7:15:04 AM
	12/2/2023 7:14:38 AM	03-042-000	REPAIR REPL COOLING SYSTEM	5.51	\$754.76	12/2/2023 12:45:14 PM
	12/2/2023 7:14:38 AM	03-042-000	REPAIR REPL COOLING SYSTEM	(5.51)	(\$754.76)	12/2/2023 4:55:33 PM
	12/6/2023 7:06:03 AM	03-045-C50	REPAIR REPL TIMING CHAIN	0.06	\$8.60	12/6/2023 7:09:51 AM
	12/6/2023 7:09:49 AM	35-033-000	DIAGNOSE IGNITION SYSTEM	6.06	\$830.14	12/6/2023 1:13:25 PM
TOTAL				38.82	\$5,318.34	

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	ACD17420	BELT	1.00	\$34.24	12/4/2023 10:23:37 AM
MANYAR	ACD17415	BELT	1.00	\$29.03	12/4/2023 10:23:37 AM
MANYAR	ACD17412	BELT	1.00	\$30.12	12/4/2023 10:23:38 AM
MANYAR	76BAG	BAG, RESPIRATORY FULL MASK	1.00	\$45.58	12/2/2023 7:33:35 AM
MANYAR	07447	PAD, RED SCOTCH BRITE	1.00	\$1.77	12/2/2023 7:05:22 AM
MANYAR	SB2088B	BRUSH, CLEANING BRASS	1.00	\$4.09	12/2/2023 7:05:24 AM
MANYAR	SB2088SS	BRUSH, CLEANING SS	1.00	\$5.13	12/2/2023 7:05:26 AM
MANYAR	13C170	WHEEL, WIRE 2"	1.00	\$23.31	12/2/2023 7:05:26 AM
MANYAR	01050-19	GREASE, PYROPLEX BLUE TUBE	10.00	\$136.97	12/6/2023 7:47:42 AM
MANYAR	3300	LUBRICANT, FLUID FILM	3.00	\$87.29	12/6/2023 7:47:42 AM
MANYAR	2087067	SEALANT, PIPE THREAD 50 ML	3.00	\$111.50	12/6/2023 7:47:42 AM
Total				\$509.03	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Total					

**WO # 226132**

**Open Date** 6/12/2023 3:36:57 PM  
**Complete Date** 11/30/2023 12:41:57 PM  
**Close Date**

**Labor** \$14,373.39  
**Parts** \$1,317.95  
**Fluid** \$0.00  
**Commercial** \$0.00  
**Total** \$15,691.34

**Unit Number A7901**

Job Notes		
Job	Change Time	Note
OVERHAUL ASSEMBLY/DISASSEMBLY	11/19/2023 5:54:23 PM	rebuilt carriage bogies
OVERHAUL ASSEMBLY/DISASSEMBLY	11/19/2023 5:54:23 PM	
OVERHAUL UNDERCARRIAGE	11/6/2023 6:52:01 AM	>REMOVED AXLES FROM BOTH BOGGIES AND WASHED FRAME.....518 >MEASURED FRAME DIMENSIONS AND FOUND FRAME IS NARROW BY 3/16" WHEEL AREA THEREFORE CAUSED WHEELS TO RUB AGAINST THE FRAME. ALSO THIS FRAME IS 1" WIDE WHERE THE BEARING JOURNAL SITES. 518
PAINT PREP COMPLETE UNIT	11/16/2023 2:34:38 PM	Painted side of cart with touch up paint red.....591
REPAIR REPL AIR LINE	11/6/2023 7:21:18 AM	-started re/re air line -air lines replaced -replaced fitting on relay valve -waiting for 90 swivel -need to secure once everything is replaced...1027
REPAIR REPL DRILL/TAP	11/15/2023 12:25:26 PM	Drill out roller holes to 1/2 fine thread
REPAIR REPL DRILL/TAP	11/15/2023 12:29:00 PM	correction 1/2 course thread
REPAIR REPL FRAME BOLTS	11/28/2023 9:33:11 AM	replace bolts on side of chair and install acorn nuts on both sides , as per inspection .....518, 1042
REPAIR REPL HOOK TOW	11/28/2023 8:22:23 AM	replace tow bar
REPAIR REPL HOOK TOW	11/30/2023 12:32:18 PM	new tow bar with new hardware done.....1042,518,1075
REPAIR REPL MISC BRACKETS	11/22/2023 7:04:50 AM	weld on clips for air line, removed all visual rust inspect and paint....689
REPAIR REPL ROOF	11/17/2023 9:53:22 AM	secure roof brackets
REPAIR REPL ROOF	11/17/2023 10:38:23 AM	Secured the roof brackets. 1075
REPAIR REPL STABILIZERROLLER	11/15/2023 10:50:10 AM	replace rollers under the cart
REPAIR REPL STABILIZERROLLER	11/16/2023 11:29:44 AM	Installed all the stabilizer rollers, had to cut the bolts shorter. 1075
REPAIR REPL SYSTEM	6/12/2023 3:37:28 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.
REPAIR REPL SYSTEM	11/3/2023 9:47:26 AM	-removed bogies from carriage...1042

TRANSPORT COMPLETE UNIT	9/25/2023 10:52:58 AM	SEA TO SKY TRANSPORT - STANLEY PARK YARD MOVE
TRANSPORT COMPLETE UNIT	10/26/2023 8:48:29 AM	SEA TO SKY TRANSPORT - STANLEY PARK TO MANHEQ

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	10/31/2023 10:02:09 AM	03-320-000	REPAIR REPL SYSTEM	0.30	\$40.87	10/31/2023 10:20:06 AM
	11/3/2023 8:23:11 AM	03-320-000	REPAIR REPL SYSTEM	1.41	\$192.56	11/3/2023 9:47:33 AM
	11/4/2023 6:00:00 AM	03-051-LS0	REPAIR REPL AIR LINE	10.00	\$1,370.00	11/5/2023 3:00:37 PM
	11/4/2023 6:00:00 AM	08-320	OVERHAUL UNDERCARRIAGE	10.00	\$1,370.00	11/5/2023 3:01:01 PM
	11/4/2023 6:08:19 AM	03-051-LS0	REPAIR REPL AIR LINE	9.59	\$1,313.15	11/4/2023 3:43:27 PM
	11/4/2023 6:08:19 AM	03-051-LS0	REPAIR REPL AIR LINE	(9.59)	(\$1,313.15)	11/5/2023 3:00:38 PM
	11/4/2023 9:38:18 AM	08-320	OVERHAUL UNDERCARRIAGE	6.09	\$834.29	11/4/2023 3:43:42 PM
	11/4/2023 9:38:18 AM	08-320	OVERHAUL UNDERCARRIAGE	(6.09)	(\$834.29)	11/5/2023 3:01:01 PM
	11/5/2023 5:52:40 AM	08-320	OVERHAUL UNDERCARRIAGE	7.07	\$969.20	11/5/2023 12:57:15 PM
	11/5/2023 5:52:40 AM	08-320	OVERHAUL UNDERCARRIAGE	(7.07)	(\$969.20)	11/5/2023 3:01:39 PM
	11/5/2023 5:52:59 AM	03-051-LS0	REPAIR REPL AIR LINE	4.59	\$628.22	11/5/2023 10:28:08 AM
	11/5/2023 5:52:59 AM	03-051-LS0	REPAIR REPL AIR LINE	(4.59)	(\$628.22)	11/5/2023 3:02:06 PM
	11/5/2023 6:00:00 AM	03-051-LS0	REPAIR REPL AIR LINE	4.47	\$612.20	11/5/2023 3:02:06 PM
	11/5/2023 6:00:00 AM	08-320	OVERHAUL UNDERCARRIAGE	6.95	\$952.45	11/5/2023 3:01:38 PM
	11/8/2023 10:05:03 AM	03-010-B49	REPAIR REPL MISC BRACKETS	1.44	\$197.47	11/8/2023 11:31:32 AM
	11/8/2023 1:59:59 PM	03-010-B49	REPAIR REPL MISC BRACKETS	1.20	\$164.10	11/8/2023 3:11:52 PM
	11/9/2023 6:31:02 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.96	\$679.79	11/9/2023 11:28:45 AM
	11/9/2023 12:00:00 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.00	\$411.00	11/10/2023 12:31:44 PM
	11/9/2023 12:04:17 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.90	\$397.91	11/9/2023 2:58:34 PM
	11/9/2023 12:04:17 PM	03-010-B49	REPAIR REPL MISC BRACKETS	(2.90)	(\$397.91)	11/10/2023 12:31:45 PM
	11/14/2023 6:31:13 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.96	\$679.44	11/14/2023 11:28:47 AM
	11/14/2023 12:03:48 PM	03-010-B49	REPAIR REPL MISC BRACKETS	3.07	\$420.48	11/14/2023 3:07:56 PM
	11/15/2023 6:31:27 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.43	\$58.83	11/15/2023 6:57:14 AM
	11/15/2023 7:44:56 AM	03-051-LS0	REPAIR REPL AIR LINE	3.05	\$417.85	11/15/2023 10:48:02 AM
	11/15/2023 10:50:21 AM	03-216-PD0	REPAIR REPL STABILIZERROLLER	0.66	\$90.69	11/15/2023 11:30:04 AM
	11/15/2023 12:01:41 PM	03-216-PD0	REPAIR REPL STABILIZERROLLER	0.89	\$121.74	11/15/2023 12:55:06 PM
	11/15/2023 12:30:17 PM	03-MCH-020	REPAIR REPL DRILL/TAP	2.05	\$280.24	11/15/2023 2:33:03 PM
	11/16/2023 6:30:00 AM	15-000-000	PAINT PREP COMPLETE UNIT	1.00	\$137.00	11/16/2023 2:35:11 PM
	11/16/2023 6:53:55 AM	03-216-PD0	REPAIR REPL STABILIZERROLLER	4.60	\$630.43	11/16/2023 11:30:02 AM

s.22(1)	11/16/2023 7:07:16 AM	03-MCH-020	REPAIR REPL DRILL/TAP	2.33	\$318.87	11/16/2023 9:26:57 AM
	11/16/2023 8:31:24 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.74	\$511.85	11/17/2023 12:16:12 AM
	11/16/2023 8:38:24 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.62	\$495.86	11/17/2023 12:15:37 AM
	11/16/2023 8:38:24 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.62)	(\$495.86)	11/17/2023 12:16:13 AM
	11/17/2023 7:01:57 AM	14-320	INSTALL UNDERCARRIAGE	2.95	\$404.64	11/17/2023 9:59:12 AM
	11/17/2023 8:25:05 AM	14-320	INSTALL UNDERCARRIAGE	1.47	\$201.81	11/17/2023 9:53:31 AM
	11/17/2023 9:59:10 AM	03-008-RY0	REPAIR REPL ROOF	0.65	\$89.70	11/17/2023 10:38:27 AM
	11/17/2023 3:37:26 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	2.60	\$355.67	11/17/2023 6:13:14 PM
	11/17/2023 8:30:53 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.72	\$509.34	11/18/2023 12:15:10 AM
	11/17/2023 8:42:53 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.52	\$481.94	11/18/2023 12:13:58 AM
	11/17/2023 8:42:53 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.52)	(\$481.94)	11/18/2023 12:15:11 AM
	11/19/2023 7:40:52 AM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	10.23	\$1,401.13	11/19/2023 5:54:31 PM
	11/20/2023 10:03:43 AM	03-010-B49	REPAIR REPL MISC BRACKETS	1.51	\$206.83	11/20/2023 11:34:17 AM
	11/21/2023 6:31:55 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.98	\$682.30	11/21/2023 11:30:44 AM
	11/21/2023 12:04:24 PM	03-010-B49	REPAIR REPL MISC BRACKETS	0.70	\$96.47	11/21/2023 12:46:40 PM
	11/22/2023 6:30:00 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.59	\$80.37	11/23/2023 6:42:18 AM
	11/22/2023 6:33:17 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.53	\$72.88	11/22/2023 7:05:12 AM
	11/22/2023 6:33:17 AM	03-010-B49	REPAIR REPL MISC BRACKETS	(0.53)	(\$72.88)	11/23/2023 6:42:18 AM
	11/28/2023 9:33:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	1.02	\$139.28	11/28/2023 9:38:08 AM
	11/28/2023 9:34:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 9:35:52 AM
	11/28/2023 9:34:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	(1.00)	(\$137.00)	11/29/2023 7:09:42 AM
	11/28/2023 9:34:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 9:38:08 AM
	11/29/2023 2:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 2:09:43 PM
	11/29/2023 2:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 2:09:43 PM
	11/29/2023 2:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 2:09:43 PM
<b>TOTAL</b>				<b>104.92</b>	<b>\$14,373.39</b>	

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	ZER2862ARGA	PAINT, ZERORUST BLACK	1.00	\$182.09	11/16/2023 4:55:25 PM	
MANYAR	1012B	PAINT, STEEL BLACK	1.00	\$56.98	11/8/2023 10:43:58 AM	
MANYAR	NPPSG-20	WRAP, SPIRAL HOSE	220.00	\$884.44	11/7/2023 4:36:55 PM	
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.45	11/15/2023 9:43:19 AM	
MANYAR	SGX20H	WRAP, HYD HOSE HD 5/16-1/2 ID	26.00	\$50.62	11/6/2023 9:30:22 AM	

MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	4.00	\$6.52	11/6/2023 9:30:22 AM
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	4.00	\$41.92	11/6/2023 9:30:22 AM
MANYAR	01A012	DRILL BIT, 3/16 SST JOBBER	3.00	\$14.50	11/15/2023 8:18:51 AM
MANYAR	NPPSG-20	WRAP, SPIRAL HOSE	3.00	\$12.06	11/7/2023 4:37:25 PM
MANYAR	36525	DISC, ROLOC GRINDING 2" 40G	2.00	\$8.31	11/14/2023 10:07:58 AM
MANYAR	36525	DISC, ROLOC GRINDING 2" 40G	2.00	\$8.31	11/9/2023 10:10:01 AM
MANYAR	01411	DISC, ROLOC GRINDING P120 3"	2.00	\$12.36	11/9/2023 10:10:01 AM
MANYAR	01050-19	GREASE, PYROPLEX BLUE TUBE	2.00	\$29.39	11/17/2023 9:29:21 AM
Total				\$1,317.95	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Total					

**WO # 226427**

**Open Date** 6/15/2023 9:23:31 AM  
**Complete Date** 6/23/2023 8:04:04 AM  
**Close Date** 7/4/2023 8:09:26 AM

**Labor** \$0.00  
**Parts** \$0.00  
**Fluid** \$0.00  
**Commercial** \$0.00  
**Total** \$0.00

**Unit Number A7902**

Job Notes		
Job	Change Time	Note
TRANSPORT COMPLETE UNIT	6/15/2023 9:24:29 AM	TRANSPORT FROM STANLEY PARK TO MANHEQ.

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
TOTAL						

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
Total					

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Total					

**WO # 233959**

**Open Date** 9/15/2023 10:54:44 AM

**Complete Date**

**Close Date**

**Labor** \$13,974.61

**Parts** \$49,030.74

**Fluid** \$0.00

**Commercial** \$336.00

**Total** \$63,341.35

**Unit Number A7902**

Job Notes		
Job	Change Time	Note
REMOVE UNDERCARRIAGE	9/19/2023 2:43:25 PM	-removed both bogies, looked for a couple of good pallets in stack to bring inside for bogies, strapped down to pallets , took to wash bay and cleaned, labeled....1042
REPAIR REPL AIR LINE	9/20/2023 2:42:37 PM	-removed and replaced all air lines, wrapped all air lines with hose wrap, added swivel fittings to air lines for easier removal, tied up air lines to frame...1042
REPAIR REPL AIR LINE	9/22/2023 2:48:47 PM	-tied all dangling air lines up, wrapped open air lines for transport...1042
REPAIR REPL ASSEMBLY/DISASSEMBLY	9/25/2023 5:59:30 PM	Disassembled train bogies and sent frames for sandblasting. this carriage has now been decommissioned
REPAIR REPL ASSEMBLY/DISASSEMBLY	9/27/2023 7:29:37 PM	one bogie frame has casting flaw and is to have NDT to determine if it can be used
REPAIR REPL ASSEMBLY/DISASSEMBLY	11/9/2023 12:15:42 AM	rebuilt bogies
REPAIR REPL BATTERY	9/25/2023 7:50:10 AM	Battery charges....1001
REPAIR REPL BATTERY	9/27/2023 12:03:19 PM	Replace 1 ea battery.
REPAIR REPL COMPLETE UNIT	9/15/2023 10:55:37 AM	unit repairs
TRANSPORT COMPLETE UNIT	9/25/2023 10:49:54 AM	SEA TO SKY TRANSPORT - MANYARD TO EVANS YARD

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	9/19/2023 6:56:26 AM	25-320	REMOVE UNDERCARRIAGE	4.61	\$631.91	9/19/2023 11:33:14 AM
	9/19/2023 7:38:30 AM	25-320	REMOVE UNDERCARRIAGE	3.86	\$528.59	9/19/2023 2:44:29 PM
	9/19/2023 7:38:30 AM	25-320	REMOVE UNDERCARRIAGE	7.08	\$970.45	9/19/2023 2:43:35 PM
	9/19/2023 7:38:30 AM	25-320	REMOVE UNDERCARRIAGE	(7.08)	(\$970.45)	9/19/2023 2:44:30 PM
	9/19/2023 11:55:58 AM	25-320	REMOVE UNDERCARRIAGE	3.16	\$433.26	9/19/2023 3:05:46 PM
	9/19/2023 12:00:00 PM	25-320	REMOVE UNDERCARRIAGE	1.50	\$205.50	9/19/2023 2:45:01 PM
	9/19/2023 1:30:00 PM	03-051-LS0	REPAIR REPL AIR LINE	1.23	\$168.28	9/19/2023 2:45:19 PM

s.22(1)	9/19/2023 2:43:31 PM	03-051-LS0	REPAIR REPL AIR LINE	0.00	\$0.42	9/19/2023 2:43:43 PM
	9/19/2023 2:43:31 PM	03-051-LS0	REPAIR REPL AIR LINE	0.00	(\$0.42)	9/19/2023 2:45:20 PM
	9/20/2023 6:56:24 AM	03-051-LS0	REPAIR REPL AIR LINE	4.63	\$633.89	9/20/2023 11:34:04 AM
	9/20/2023 7:25:22 AM	03-051-LS0	REPAIR REPL AIR LINE	4.08	\$558.58	9/21/2023 6:45:06 AM
	9/20/2023 7:25:22 AM	03-051-LS0	REPAIR REPL AIR LINE	7.47	\$1,023.96	9/20/2023 2:53:50 PM
	9/20/2023 7:25:22 AM	03-051-LS0	REPAIR REPL AIR LINE	(7.47)	(\$1,023.96)	9/21/2023 6:45:07 AM
	9/20/2023 12:00:00 PM	03-051-LS0	REPAIR REPL AIR LINE	2.65	\$363.05	9/21/2023 6:45:07 AM
	9/20/2023 12:07:09 PM	03-051-LS0	REPAIR REPL AIR LINE	3.08	\$422.30	9/20/2023 3:12:09 PM
	9/20/2023 8:32:43 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.79	\$518.55	9/21/2023 12:20:40 AM
	9/20/2023 8:35:43 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.74	\$511.70	9/21/2023 12:19:51 AM
	9/20/2023 8:35:43 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.74)	(\$511.70)	9/21/2023 12:20:41 AM
	9/21/2023 6:56:40 AM	03-051-LS0	REPAIR REPL AIR LINE	2.30	\$314.53	9/21/2023 9:14:33 AM
	9/21/2023 9:36:40 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.81	\$385.27	9/22/2023 12:25:25 AM
	9/22/2023 8:30:47 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.80	\$520.26	9/23/2023 12:19:08 AM
	9/22/2023 8:33:47 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.75	\$513.41	9/23/2023 12:18:40 AM
	9/22/2023 8:33:47 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.75)	(\$513.41)	9/23/2023 12:19:09 AM
	9/25/2023 6:50:00 AM	03-032-B00	REPAIR REPL BATTERY	0.17	\$22.83	9/25/2023 11:13:59 AM
	9/26/2023 6:54:41 AM	03-032-B00	REPAIR REPL BATTERY	0.27	\$37.45	9/26/2023 7:11:07 AM
	9/26/2023 12:04:59 PM	03-051-LS0	REPAIR REPL AIR LINE	0.04	\$5.67	9/26/2023 12:07:30 PM
	10/6/2023 9:33:09 AM	12-008-A00	REFINISH ASSEMBLY	1.95	\$306.73	10/6/2023 12:24:04 PM
	10/6/2023 9:33:09 AM	12-008-A00	REFINISH ASSEMBLY	1.90	\$299.91	10/6/2023 11:27:24 AM
	10/6/2023 9:33:09 AM	12-008-A00	REFINISH ASSEMBLY	(1.90)	(\$299.91)	10/6/2023 12:24:05 PM
	10/6/2023 12:00:34 PM	12-008-A00	REFINISH ASSEMBLY	2.99	\$471.01	10/6/2023 2:57:42 PM
	10/6/2023 12:00:34 PM	12-008-A00	REFINISH ASSEMBLY	2.94	\$462.66	10/6/2023 2:56:50 PM
	10/6/2023 12:00:34 PM	12-008-A00	REFINISH ASSEMBLY	(2.94)	(\$462.66)	10/6/2023 2:57:43 PM
	10/16/2023 6:46:44 AM	12-008-A00	REFINISH ASSEMBLY	0.36	\$57.01	10/16/2023 7:08:27 AM
	10/30/2023 9:19:03 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.91	\$398.56	10/31/2023 12:13:37 AM
	10/31/2023 3:50:35 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	4.17	\$571.33	10/31/2023 8:00:49 PM
	10/31/2023 8:30:23 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	0.87	\$118.92	11/1/2023 12:16:51 AM
	10/31/2023 8:36:23 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	0.77	\$105.22	10/31/2023 9:22:30 PM
	10/31/2023 8:36:23 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(0.77)	(\$105.22)	11/1/2023 12:16:52 AM
	10/31/2023 10:37:49 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.64	\$224.64	11/1/2023 12:16:13 AM
	11/1/2023 6:55:48 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.11	\$152.60	11/1/2023 8:02:40 PM
	11/1/2023 8:32:34 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.75	\$513.60	11/2/2023 12:18:33 AM



s.22(1) )	11/1/2023 8:36:34 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.68	\$504.46	11/2/2023 12:17:32 AM
	11/1/2023 8:36:34 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.68)	(\$504.46)	11/2/2023 12:18:34 AM
	11/2/2023 5:49:16 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.20	\$301.97	11/2/2023 8:01:32 PM
	11/2/2023 9:23:22 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.88	\$393.91	11/3/2023 12:15:54 AM
	11/3/2023 4:27:33 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.57	\$489.47	11/3/2023 8:01:56 PM
	11/3/2023 8:31:11 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.76	\$515.01	11/4/2023 12:17:24 AM
	11/3/2023 8:35:11 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.69	\$505.87	11/4/2023 12:16:46 AM
	11/3/2023 8:35:11 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.69)	(\$505.87)	11/4/2023 12:17:25 AM
	11/5/2023 7:48:26 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.09	\$1,382.37	11/5/2023 5:53:52 PM
	11/6/2023 4:37:50 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.38	\$462.83	11/6/2023 8:00:33 PM
	11/6/2023 8:30:51 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.81	\$521.86	11/7/2023 12:20:49 AM
	11/6/2023 8:36:51 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.71	\$508.16	11/7/2023 12:19:25 AM
	11/6/2023 8:36:51 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.71)	(\$508.16)	11/7/2023 12:20:49 AM
	11/7/2023 5:48:21 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.23	\$305.24	11/7/2023 8:02:03 PM
	11/7/2023 8:32:31 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.81	\$522.08	11/8/2023 12:21:11 AM
	11/8/2023 8:30:01 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.76	\$515.54	11/9/2023 12:17:55 AM
	11/8/2023 8:35:01 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.68	\$504.12	11/9/2023 12:15:49 AM
11/8/2023 8:35:01 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.68)	(\$504.12)	11/9/2023 12:17:56 AM	
TOTAL			101.21	\$13,974.61		

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:08 PM	
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$689.24	9/18/2023 8:43:38 AM	
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$399.88	9/18/2023 8:43:38 AM	
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,033.47	9/18/2023 8:43:39 AM	
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$859.75	9/18/2023 8:43:39 AM	
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,746.32	9/18/2023 8:43:39 AM	
MANYAR	20934000	BRAKE SHOE, 1023124-000	16.00	\$463.86	9/18/2023 8:43:39 AM	
MANYAR	25237700	PIN CLEVIS, 1/2X21/2 ZP	8.00	\$16.17	9/18/2023 8:43:39 AM	
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$76.28	9/18/2023 8:43:40 AM	
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.79	9/18/2023 8:43:40 AM	
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$4,828.86	9/18/2023 8:43:40 AM	
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$13.29	9/18/2023 8:43:40 AM	

MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$86.40	9/18/2023 8:43:40 AM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 2:14:48 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	3.00	\$523.52	10/24/2023 2:14:48 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 2:14:48 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 2:14:49 PM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 2:10:34 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 2:10:34 PM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	23.00	\$3.99	10/24/2023 2:10:34 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 2:11:55 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 2:11:55 PM
MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 2:11:56 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 2:11:56 PM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$136.45	9/18/2023 8:43:40 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$0.97	9/18/2023 8:43:41 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$7.64	9/18/2023 8:43:41 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/18/2023 8:43:41 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/18/2023 8:43:41 AM
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$58.58	9/18/2023 8:43:41 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	20.00	\$3.47	9/18/2023 8:43:41 AM
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$42.69	9/18/2023 8:43:41 AM
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$128.03	9/18/2023 8:43:42 AM
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$46.67	9/18/2023 8:43:42 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.39	9/18/2023 8:43:42 AM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$88.39	9/18/2023 8:43:42 AM
MANYAR	1023027-001	BAR, L-SPRING	8.00	\$313.87	9/18/2023 8:43:42 AM
MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$11.11	9/18/2023 8:43:42 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/18/2023 8:43:43 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/18/2023 8:43:43 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	13.00	\$2.26	9/18/2023 8:43:43 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$5.56	9/18/2023 8:43:43 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$0.89	9/18/2023 8:43:43 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$7.34	9/18/2023 8:43:43 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	13.00	\$2.90	9/18/2023 8:43:43 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$5.36	9/18/2023 8:43:43 AM

MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.08	9/18/2023 8:43:44 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$2.78	9/18/2023 8:43:44 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.39	9/18/2023 8:43:44 AM
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$470.90	9/18/2023 8:43:44 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.47	9/18/2023 8:43:44 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$9.77	9/18/2023 8:43:44 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$7.54	9/18/2023 8:43:45 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	8.00	\$3.77	9/18/2023 8:43:45 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/18/2023 8:43:45 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/18/2023 8:43:45 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/18/2023 8:43:45 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.39	9/18/2023 8:43:45 AM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$2.73	9/18/2023 8:43:45 AM
MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,017.10	9/18/2023 8:43:46 AM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$137.49	9/18/2023 8:43:46 AM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$262.14	9/18/2023 8:43:46 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$190.66	9/18/2023 8:43:46 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$780.70	9/18/2023 8:43:46 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,016.40	9/18/2023 8:43:46 AM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$11.11	9/18/2023 8:43:47 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$15.48	9/18/2023 8:43:47 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$154.68	9/18/2023 8:43:47 AM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$480.82	9/18/2023 8:43:47 AM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$702.53	9/18/2023 8:43:47 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$71.42	9/18/2023 8:43:47 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$2.78	9/18/2023 8:43:47 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$4.86	9/18/2023 8:43:48 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.39	9/18/2023 8:43:48 AM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$610.82	9/18/2023 8:43:48 AM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$643.96	9/18/2023 8:43:48 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$11.61	9/18/2023 8:43:48 AM
MANYAR	60766800	HHCS, 3/8-16X1 1/4 GR5 Z/P	8.00	\$2.78	9/18/2023 8:43:48 AM
MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$161.20	9/18/2023 8:43:49 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.08	9/18/2023 8:43:49 AM

MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	16.00	\$16.07	9/18/2023 8:43:49 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.39	9/18/2023 8:43:49 AM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.07	9/18/2023 8:43:49 AM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$494.71	9/18/2023 8:43:50 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$254.05	9/18/2023 8:43:50 AM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$3.82	9/18/2023 8:43:50 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$89.13	9/18/2023 8:43:50 AM
MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$4.86	9/18/2023 8:43:50 AM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$810.61	9/18/2023 8:43:50 AM
MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$810.61	9/18/2023 8:43:50 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$6.94	9/18/2023 8:43:51 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$7.14	9/18/2023 8:43:51 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/18/2023 8:43:51 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/18/2023 8:43:51 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/18/2023 8:43:51 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/18/2023 8:43:52 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,253.59	9/18/2023 8:43:52 AM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$200.88	9/18/2023 8:43:52 AM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,338.41	9/18/2023 8:43:52 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$4.56	9/18/2023 8:43:52 AM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$521.79	9/18/2023 8:43:53 AM
MANYAR	1022115-002	SPACER	1.00	\$42.69	9/18/2023 8:43:53 AM
MANYAR	96670	MARKER,SECURITY CHECK RED	3.00	\$29.57	11/1/2023 6:06:53 PM
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$356.82	9/18/2023 8:43:38 AM
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,060.84	9/18/2023 8:43:38 AM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	4.00	\$154.36	9/18/2023 8:43:38 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$252.56	9/18/2023 8:43:38 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$960.45	9/18/2023 8:43:38 AM
MANYAR	PSG-25	LOOM, 3/4"	134.00	\$739.61	9/21/2023 11:36:13 AM
MANYAR	HPX34	BATTERY, GRP 34 800CCA	1.00	\$239.72	9/25/2023 3:41:22 PM
MANYAR	725-6C	FITTING, 3/8ID X 3/8MPT BRASS	2.00	\$7.30	9/20/2023 11:24:11 AM
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.44	9/20/2023 11:24:12 AM
MANYAR	SGX20H	WRAP, HYD HOSE HD 5/16-1/2 ID	54.00	\$111.04	9/20/2023 9:40:36 AM
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	1.00	\$8.47	9/20/2023 9:15:56 AM

MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	1.00	\$8.89	10/3/2023 7:03:49 AM
MANYAR	S778	COUPLING, MALE AIR 1/4 NPT FEM	1.00	\$5.44	9/20/2023 9:15:54 AM
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.92	9/20/2023 9:15:55 AM
MANYAR	110-CB	BUSHING, 3/8"NPT X 1/4 "FPT	2.00	\$3.42	9/20/2023 9:15:55 AM
MANYAR	112-C	NIPPLE, CLOSE 3/8" NPT	2.00	\$5.13	9/20/2023 9:15:55 AM
MANYAR	24220	HOSE, RADIATOR 1-1/4"	4.00	\$4.64	9/20/2023 9:15:55 AM
MANYAR	96670	MARKER,SECURITY CHECK RED	1.00	\$9.86	11/7/2023 4:19:48 PM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	108.00	\$644.82	9/19/2023 2:56:57 PM
Total				\$49,030.74	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	10/25/2023 12:40:06 PM	25-320	REMOVE UNDERCARRIAGE	\$313.60	10/25/2023 12:40:05 PM
City of Vancouver	9/27/2023 12:04:12 PM	03-032-B00	REPAIR REPL BATTERY	\$22.40	9/27/2023 12:04:12 PM
Total				\$336.00	

**WO # 226133**

**Open Date** 6/12/2023 3:38:28 PM  
**Complete Date** 8/28/2023 4:45:59 PM  
**Close Date** 9/28/2023 12:47:04 PM

**Labor** \$0.00  
**Parts** \$28,049.60  
**Fluid** \$0.00  
**Commercial** \$100.00  
**Total** \$28,149.60

**Unit Number A7904**

Job Notes		
Job	Change Time	Note
REPAIR REPL SYSTEM	6/12/2023 3:38:57 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
TOTAL						

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:08 PM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,016.40	9/18/2023 1:22:09 PM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$137.49	9/19/2023 8:25:43 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$780.70	9/19/2023 8:25:44 AM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$3.82	9/19/2023 8:25:44 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$89.13	9/19/2023 8:25:44 AM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.79	9/19/2023 9:04:34 AM
MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$86.40	9/19/2023 9:04:34 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	13.00	\$2.26	9/19/2023 9:04:35 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$3.97	9/19/2023 9:04:35 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.08	9/19/2023 9:04:35 AM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.07	9/19/2023 9:04:35 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$4.56	9/19/2023 9:04:36 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/19/2023 9:19:15 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/19/2023 9:19:15 AM
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$58.58	9/19/2023 9:19:15 AM

MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	4.00	\$0.69	9/19/2023 9:19:16 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/19/2023 9:19:16 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/19/2023 9:19:16 AM
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$42.69	9/19/2023 9:19:16 AM
MANYAR	1023027-001	BAR, L-SPRING	8.00	\$313.87	9/19/2023 9:19:17 AM
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$470.90	9/19/2023 9:19:17 AM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$2.73	9/19/2023 9:19:17 AM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$11.11	9/19/2023 9:19:17 AM
MANYAR	1022115-002	SPACER	1.00	\$42.36	9/19/2023 9:19:18 AM
MANYAR	25237700	PIN CLEVIS, 1/2X2 1/2 ZP	8.00	\$16.17	9/19/2023 8:56:46 AM
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$76.28	9/19/2023 8:56:46 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$190.66	9/19/2023 8:56:46 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$154.68	9/19/2023 8:56:46 AM
MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	16.00	\$17.06	9/19/2023 8:56:47 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$6.94	9/19/2023 8:56:47 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$7.14	9/19/2023 8:56:48 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/19/2023 8:56:48 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/19/2023 8:56:48 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/19/2023 8:56:48 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.42	9/19/2023 8:56:49 AM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	4.00	\$154.36	9/19/2023 9:30:54 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$252.56	9/19/2023 9:30:54 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$960.45	9/19/2023 9:30:54 AM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$1,284.44	9/19/2023 9:30:54 AM
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$399.88	9/19/2023 9:30:55 AM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,033.47	9/19/2023 9:30:55 AM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$4,828.86	9/19/2023 9:30:55 AM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$480.82	9/19/2023 9:30:55 AM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$702.53	9/19/2023 9:30:56 AM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$810.61	9/19/2023 9:30:56 AM
MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$810.61	9/19/2023 9:30:56 AM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,338.41	9/19/2023 9:30:56 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$7.34	9/19/2023 9:02:12 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$9.77	9/19/2023 9:02:13 AM

MANYAR	60766800	HHCS, 3/8-16X1 1/4 GR5 Z/P	8.00	\$2.78	9/19/2023 9:02:13 AM
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$13.29	9/19/2023 9:11:39 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$0.97	9/19/2023 9:11:39 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$7.64	9/19/2023 9:11:40 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.39	9/19/2023 9:11:40 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/19/2023 9:11:40 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/19/2023 9:11:40 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$0.89	9/19/2023 9:11:41 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.08	9/19/2023 9:11:41 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$2.78	9/19/2023 9:11:41 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.39	9/19/2023 9:11:41 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/19/2023 9:11:41 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/19/2023 9:11:42 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.50	9/19/2023 9:11:42 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.39	9/19/2023 9:11:42 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$2.78	9/19/2023 9:11:42 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$4.86	9/19/2023 9:11:43 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.39	9/19/2023 9:11:43 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$11.61	9/19/2023 9:11:43 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.39	9/19/2023 9:11:43 AM
MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$4.86	9/19/2023 9:11:43 AM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$521.79	9/19/2023 9:30:57 AM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$859.75	9/19/2023 9:35:47 AM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,746.32	9/19/2023 9:35:47 AM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$136.45	9/19/2023 9:35:47 AM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$262.14	9/19/2023 9:35:47 AM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$610.82	9/19/2023 9:35:48 AM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$643.96	9/19/2023 9:35:48 AM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$494.71	9/19/2023 9:35:48 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$254.05	9/19/2023 9:35:49 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,253.29	9/19/2023 9:35:49 AM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$200.88	9/19/2023 9:35:49 AM
MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,014.32	9/19/2023 8:25:43 AM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$119.34	9/19/2023 9:00:36 AM



MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$11.11	9/19/2023 9:00:36 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	16.00	\$3.57	9/19/2023 9:00:36 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$5.36	9/19/2023 9:00:36 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.47	9/19/2023 9:00:37 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$7.54	9/19/2023 9:00:37 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	8.00	\$3.77	9/19/2023 9:00:37 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$15.48	9/19/2023 9:00:37 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$71.42	9/19/2023 9:00:38 AM
MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$161.20	9/19/2023 9:00:38 AM
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$356.82	9/19/2023 9:19:14 AM
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,060.55	9/19/2023 9:19:15 AM
MANYAR	20934000	BRAKE SHOE, 1023124-000	16.00	\$463.86	9/19/2023 8:25:42 AM
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$128.03	9/19/2023 8:25:42 AM
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$46.67	9/19/2023 8:25:43 AM
Total				\$28,049.60	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
City of Vancouver	9/28/2023 12:47:05 PM	AH-000	SHOP CHARGE UNIT SERVICES	\$100.00	9/28/2023 12:47:04 PM
Total				\$100.00	

**WO # 234624**

**Open Date** 9/25/2023 10:55:56 AM

**Complete Date** 11/30/2023 12:37:43 PM

**Close Date**

**Labor** \$17,484.79

**Parts** \$26,501.31

**Fluid** \$0.00

**Commercial** \$313.60

**Total** \$44,299.70

**Unit Number A7904**

Job Notes		
Job	Change Time	Note
FABRICATE MISC BRACKETS	11/3/2023 11:28:55 AM	clean up rust /repair, and paint...689
FABRICATE MISC BRACKETS	11/3/2023 11:29:19 AM	add brackets as per request...689
INSTALL UNDERCARRIAGE	11/6/2023 7:22:59 AM	-installed front and rear bogies -connected air lines -secured air lines...1027/518
INSTALL UNDERCARRIAGE	11/6/2023 2:45:32 PM	-removed plexi-glass mounts -repaired roof...1027
INSTALL UNDERCARRIAGE	11/14/2023 8:03:47 AM	Checked brakes with shop air , no leaks working good.....1027
PAINT PREP COMPLETE UNIT	11/14/2023 8:01:18 AM	Touch up painted A7904.....591
PAINT PREP COMPLETE UNIT	11/14/2023 8:04:09 AM	Red Paint
REMOVE UNDERCARRIAGE	10/5/2023 2:50:58 PM	Job complete. 1074 -Raised unit with jacks/stands -Removed brackets fastened to bogies -Cut air lines going to bogies -Prepped bogies for wash bay (fastened them to pallets)
REPAIR REPL AIR SUPPLY SYSTEM	11/6/2023 10:59:30 AM	>HOOKED UP SHOP AND CHECK FOR LEAKS.....GOOD.....518/1027
REPAIR REPL ASSEMBLY/DISASSEMBLY	11/7/2023 8:36:46 PM	made brake and installed brake lines.....855 disassembled bogies.....855 cleaned and painted parts.....855 disassembled and re-machined axles.....855 assembled bogies.....852
REPAIR REPL FRAME BOLTS	11/28/2023 9:30:19 AM	replace bolts on side of chair and install acorn nuts on both sides , as per inspection .....518, 1042
REPAIR REPL HOOK TOW	11/28/2023 8:25:42 AM	replace tow bars
REPAIR REPL HOOK TOW	11/30/2023 12:34:16 PM	new tow bar with new hardware done.....1042,518,1075
REPAIR REPL HOSE	10/6/2023 2:33:41 PM	-Put unit on sawhorses for easier access, started replacing air lines....1042

REPAIR REPL HOSE	10/11/2023 10:22:28 AM	Replaced the hoses. Waiting for looms. 1075
REPAIR REPL HOSE	10/11/2023 2:59:09 PM	Ran out of time wrapping the loom. 1075
REPAIR REPL HOSE	10/12/2023 6:53:10 AM	Finished the loom. 1075
TRANSPORT COMPLETE UNIT	9/25/2023 10:56:45 AM	SEA TO SKY TRANSPORT - STANLEY PARK TO MANYARD
TRANSPORT COMPLETE UNIT	11/10/2023 9:49:20 AM	SEA TO SKY TRANSPORT - MANYARDS TO TANLEY PARK Nov. 13

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	10/5/2023 12:13:06 PM	25-320	REMOVE UNDERCARRIAGE	2.83	\$387.41	10/5/2023 3:02:47 PM
	10/5/2023 12:13:06 PM	25-320	REMOVE UNDERCARRIAGE	(2.83)	(\$387.41)	10/6/2023 2:42:39 PM
	10/5/2023 12:13:06 PM	25-320	REMOVE UNDERCARRIAGE	2.78	\$381.09	10/6/2023 2:42:39 PM
	10/5/2023 12:31:04 PM	25-320	REMOVE UNDERCARRIAGE	2.62	\$359.24	10/5/2023 3:08:25 PM
	10/5/2023 12:31:04 PM	25-320	REMOVE UNDERCARRIAGE	(2.62)	(\$359.24)	10/6/2023 2:45:14 PM
	10/5/2023 12:31:04 PM	25-320	REMOVE UNDERCARRIAGE	2.48	\$340.06	10/6/2023 2:45:13 PM
	10/6/2023 7:47:15 AM	16-000-000	TRANSPORT COMPLETE UNIT	0.02	\$2.06	10/6/2023 7:48:46 AM
	10/6/2023 7:48:09 AM	25-320	REMOVE UNDERCARRIAGE	4.30	\$589.52	10/6/2023 12:06:21 PM
	10/6/2023 8:17:05 AM	03-013-H51	REPAIR REPL HOSE	3.22	\$440.49	10/10/2023 7:45:43 AM
	10/6/2023 8:17:05 AM	03-013-H51	REPAIR REPL HOSE	6.69	\$916.61	10/6/2023 2:58:31 PM
	10/6/2023 8:17:05 AM	03-013-H51	REPAIR REPL HOSE	(6.69)	(\$916.61)	10/10/2023 7:45:44 AM
	10/6/2023 12:00:00 PM	03-013-H51	REPAIR REPL HOSE	3.00	\$411.00	10/10/2023 7:45:44 AM
	10/6/2023 12:32:34 PM	25-320	REMOVE UNDERCARRIAGE	2.57	\$351.79	10/6/2023 3:06:40 PM
	10/6/2023 12:32:34 PM	25-320	REMOVE UNDERCARRIAGE	(2.57)	(\$351.79)	10/10/2023 7:46:38 AM
	10/6/2023 12:36:00 PM	25-320	REMOVE UNDERCARRIAGE	2.40	\$328.80	10/10/2023 7:46:37 AM
	10/9/2023 7:35:23 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.36	\$1,419.21	10/9/2023 5:56:56 PM
	10/10/2023 3:45:35 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	4.24	\$580.50	10/10/2023 8:00:05 PM
	10/11/2023 7:54:22 AM	03-013-H51	REPAIR REPL HOSE	1.09	\$149.94	10/11/2023 9:00:03 AM
	10/11/2023 9:37:59 AM	03-013-H51	REPAIR REPL HOSE	0.74	\$101.80	10/11/2023 10:22:35 AM
	10/11/2023 1:22:31 PM	03-013-H51	REPAIR REPL HOSE	1.61	\$220.87	10/11/2023 2:59:15 PM
	10/12/2023 6:21:36 AM	03-013-H51	REPAIR REPL HOSE	0.53	\$72.27	10/12/2023 6:53:19 AM
	10/12/2023 6:21:36 AM	03-013-H51	REPAIR REPL HOSE	(0.53)	(\$72.27)	10/13/2023 2:44:19 PM
	10/12/2023 6:30:00 AM	03-013-H51	REPAIR REPL HOSE	0.39	\$53.09	10/13/2023 2:44:19 PM
	10/26/2023 7:20:11 AM	21-010-B49	FABRICATE MISC BRACKETS	0.11	\$15.26	10/26/2023 7:26:54 AM

s.22(1)	10/26/2023 7:38:14 AM	12-008-A00	REFINISH ASSEMBLY	2.35	\$370.30	10/26/2023 9:59:20 AM
	10/26/2023 7:38:21 AM	16-002-000	TRANSPORT CAB SYSTEM	1.08	\$147.85	10/26/2023 8:43:07 AM
	10/26/2023 9:44:51 AM	21-010-B49	FABRICATE MISC BRACKETS	1.89	\$258.55	10/26/2023 11:38:06 AM
	10/26/2023 10:01:32 AM	12-008-A00	REFINISH ASSEMBLY	1.40	\$220.15	10/26/2023 11:25:24 AM
	10/26/2023 10:01:32 AM	12-008-A00	REFINISH ASSEMBLY	(1.40)	(\$220.15)	10/26/2023 12:23:34 PM
	10/26/2023 10:01:32 AM	12-008-A00	REFINISH ASSEMBLY	1.47	\$232.23	10/26/2023 12:23:34 PM
	10/26/2023 11:59:37 AM	12-008-A00	REFINISH ASSEMBLY	(2.97)	(\$467.95)	10/27/2023 6:08:28 AM
	10/26/2023 11:59:37 AM	12-008-A00	REFINISH ASSEMBLY	2.97	\$467.95	10/26/2023 2:57:54 PM
	10/26/2023 12:00:00 PM	12-008-A00	REFINISH ASSEMBLY	3.00	\$472.50	10/27/2023 6:08:27 AM
	10/26/2023 12:04:24 PM	21-010-B49	FABRICATE MISC BRACKETS	2.97	\$406.74	10/26/2023 3:02:32 PM
	10/26/2023 12:06:55 PM	16-002-000	TRANSPORT CAB SYSTEM	1.04	\$141.80	10/26/2023 1:09:02 PM
	10/27/2023 6:28:27 AM	12-008-A00	REFINISH ASSEMBLY	0.73	\$114.19	10/27/2023 7:12:00 AM
	10/27/2023 6:28:27 AM	12-008-A00	REFINISH ASSEMBLY	(0.73)	(\$114.19)	10/27/2023 2:49:25 PM
	10/27/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	0.70	\$110.12	10/27/2023 2:49:24 PM
	10/28/2023 7:35:56 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.44	\$1,430.77	10/28/2023 6:02:34 PM
	10/29/2023 8:05:07 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	9.91	\$1,358.32	10/30/2023 6:43:29 AM
	10/29/2023 8:05:07 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	22.61	\$3,097.42	10/30/2023 6:41:40 AM
	10/29/2023 8:05:07 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(22.61)	(\$3,097.42)	10/30/2023 6:43:30 AM
	10/30/2023 6:30:00 AM	21-010-B49	FABRICATE MISC BRACKETS	0.43	\$58.45	11/1/2023 6:17:58 AM
	10/30/2023 6:32:12 AM	21-010-B49	FABRICATE MISC BRACKETS	0.39	\$53.43	10/30/2023 6:55:52 AM
	10/30/2023 6:32:12 AM	21-010-B49	FABRICATE MISC BRACKETS	(0.39)	(\$53.43)	11/1/2023 6:17:58 AM
	11/2/2023 2:07:59 PM	21-010-B49	FABRICATE MISC BRACKETS	0.95	\$130.53	11/2/2023 3:05:09 PM
	11/3/2023 8:42:01 AM	21-010-B49	FABRICATE MISC BRACKETS	1.30	\$177.91	11/3/2023 10:00:11 AM
	11/3/2023 10:40:13 AM	21-010-B49	FABRICATE MISC BRACKETS	0.82	\$112.57	11/3/2023 11:29:32 AM
	11/4/2023 8:17:23 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.04	\$1,375.97	11/5/2023 7:50:15 AM
	11/4/2023 8:17:23 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	23.51	\$3,221.21	11/5/2023 7:48:09 AM
	11/4/2023 8:17:23 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(23.51)	(\$3,221.21)	11/5/2023 7:50:16 AM
	11/5/2023 7:48:36 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.08	\$1,381.38	11/5/2023 5:53:37 PM
	11/5/2023 12:55:43 PM	14-320	INSTALL UNDERCARRIAGE	3.07	\$420.78	11/5/2023 3:02:06 PM
	11/5/2023 12:55:43 PM	14-320	INSTALL UNDERCARRIAGE	2.07	\$284.01	11/5/2023 3:00:07 PM
	11/5/2023 12:55:43 PM	14-320	INSTALL UNDERCARRIAGE	(2.07)	(\$284.01)	11/5/2023 3:02:06 PM
	11/5/2023 12:57:08 PM	14-320	INSTALL UNDERCARRIAGE	2.03	\$278.45	11/5/2023 2:59:16 PM
	11/6/2023 6:43:44 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	1.00	\$137.00	11/6/2023 11:03:02 AM
	11/6/2023 7:00:00 AM	14-320	INSTALL UNDERCARRIAGE	3.27	\$448.45	11/6/2023 2:43:08 PM

s.22(1)	11/6/2023 7:16:43 AM	14-320	INSTALL UNDERCARRIAGE	2.99	\$410.28	11/6/2023 10:16:26 AM
	11/6/2023 7:16:43 AM	14-320	INSTALL UNDERCARRIAGE	(2.99)	(\$410.28)	11/6/2023 2:43:09 PM
	11/6/2023 10:50:57 AM	14-320	INSTALL UNDERCARRIAGE	1.27	\$173.76	11/6/2023 12:07:05 PM
	11/6/2023 10:50:57 AM	14-320	INSTALL UNDERCARRIAGE	(1.27)	(\$173.76)	11/6/2023 2:43:09 PM
	11/6/2023 10:50:57 AM	14-320	INSTALL UNDERCARRIAGE	0.65	\$89.16	11/6/2023 2:43:08 PM
	11/6/2023 10:58:57 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	0.02	\$2.63	11/6/2023 11:00:07 AM
	11/6/2023 10:58:57 AM	03-051-000	REPAIR REPL AIR SUPPLY SYSTEM	(0.02)	(\$2.63)	11/6/2023 11:03:02 AM
	11/6/2023 4:02:07 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.97	\$544.00	11/6/2023 8:00:23 PM
	11/6/2023 8:30:42 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.81	\$521.63	11/7/2023 12:21:10 AM
	11/6/2023 8:36:42 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.71	\$507.93	11/7/2023 12:19:14 AM
	11/6/2023 8:36:42 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.71)	(\$507.93)	11/7/2023 12:21:11 AM
	11/7/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	2.87	\$392.89	11/8/2023 6:14:09 AM
	11/7/2023 6:31:59 AM	12-008-A00	REFINISH ASSEMBLY	2.83	\$388.36	11/7/2023 12:51:47 PM
	11/7/2023 6:31:59 AM	12-008-A00	REFINISH ASSEMBLY	(2.83)	(\$388.36)	11/8/2023 6:14:10 AM
	11/8/2023 7:28:48 AM	21-010-B49	FABRICATE MISC BRACKETS	2.60	\$356.77	11/8/2023 10:05:06 AM
	11/14/2023 6:30:00 AM	15-000-000	PAINT PREP COMPLETE UNIT	3.00	\$411.00	11/14/2023 8:01:51 AM
	11/28/2023 1:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 2:45:15 PM
	11/28/2023 1:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 2:45:15 PM
	11/29/2023 10:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:18:43 AM
11/29/2023 10:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:18:43 AM	
11/29/2023 10:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:18:43 AM	
TOTAL			126.50	\$17,484.79		

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	122-CB	NIPPLE, 3/8-1/4	3.00	\$5.89	10/11/2023 12:23:34 PM	
MANYAR	122-CB	NIPPLE, 3/8-1/4	3.00	\$5.89	10/11/2023 4:03:14 PM	
MANYAR	PSG-20	SPIRAL, GRD 0.63	130.00	\$589.89	10/11/2023 9:34:56 AM	
MANYAR	PSG-20	SPIRAL, GRD 0.63	20.00	\$90.76	10/11/2023 9:35:23 AM	
MANYAR	122-CB	NIPPLE, 3/8-1/4	6.00	\$11.82	10/12/2023 1:19:05 PM	
MANYAR	165BK4A	TAPE, ELECTRICAL 3/4X66'	2.00	\$5.28	10/6/2023 10:18:05 AM	
MANYAR	122-CB	NIPPLE, 3/8-1/4	2.00	\$3.96	10/11/2023 8:44:11 PM	
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	50.00	\$298.53	10/6/2023 1:23:44 PM	
MANYAR	48-6B	CONNECTOR, 3/8TUBE OD X 1/4MPT	8.00	\$13.80	10/6/2023 1:23:44 PM	

MANYAR	122-B	NIPPLE, 1/4NPT X 1-3/8"L HEX	2.00	\$3.83	10/6/2023 1:23:44 PM
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.92	10/6/2023 1:23:45 PM
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.45	10/6/2023 2:06:02 PM
MANYAR	122-CB	NIPPLE, 3/8-1/4	1.00	\$1.97	10/11/2023 8:44:41 PM
MANYAR	84-4000	TUBING, SHRINK DUAL WALL 1/4	6.00	\$12.25	10/29/2023 3:01:25 PM
MANYAR	CDA1630	PAINT, SPRAY ENAMEL GREEN	1.00	\$14.76	10/29/2023 2:33:50 PM
MANYAR	122-CB	NIPPLE, 3/8-1/4	1.00	\$1.96	10/12/2023 1:21:28 PM
MANYAR	122-CB	NIPPLE, 3/8-1/4	2.00	\$3.93	10/11/2023 10:14:26 AM
MANYAR	122-CB	NIPPLE, 3/8-1/4	(2.00)	(\$3.93)	10/12/2023 1:21:28 PM
MANYAR	SS-400-2-2	FITTING, ELBOW	30.00	\$1,365.28	11/1/2023 12:30:23 PM
MANYAR	SS-400-4-4TTF	FITTING, TEE	10.00	\$1,252.50	11/2/2023 11:13:02 AM
MANYAR	SS-400-3	FITTING, UNION TEE	20.00	\$2,154.98	11/2/2023 11:13:02 AM
MANYAR	SS-400-2-2	FITTING, ELBOW	10.00	\$455.09	11/2/2023 11:13:02 AM
MANYAR	11L313	WHEEL, CUTOFF ZIP 3X1/16X3/8	4.00	\$28.15	10/9/2023 9:53:43 AM
MANYAR	ZER2862ARGA	PAINT, ZERORUST BLACK	1.00	\$178.24	11/7/2023 4:13:37 PM
MANYAR	AERO-PT	CUSTOM COLOUR	2.00	\$101.32	11/7/2023 4:22:31 PM
MANYAR	ECO-FEE	ECO-FEE	2.00	\$0.93	11/7/2023 4:22:42 PM
MANYAR	83100	BRUSH, WIRE 4 ROW	1.00	\$3.76	11/7/2023 10:26:23 AM
MANYAR	04240	URETHANE, TWO PART PLASTIC	1.00	\$111.38	11/6/2023 10:54:04 AM
MANYAR	110-CB	BUSHING, 3/8"NPT X 1/4 "FPT	2.00	\$3.42	10/6/2023 1:23:45 PM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 2:20:46 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 2:20:46 PM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 2:20:47 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	3.00	\$523.52	10/24/2023 2:20:47 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 2:20:47 PM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	23.00	\$3.99	10/24/2023 2:20:47 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 2:20:47 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 2:20:48 PM
MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 2:20:48 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 2:20:48 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 2:20:48 PM
Total				\$26,501.31	

Commercial

Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	10/25/2023 2:05:37 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	\$313.60	10/25/2023 2:05:37 PM
Total				\$313.60	

**WO # 216432**

**Open Date** 2/17/2023 7:46:41 AM  
**Complete Date** 5/1/2023 12:44:55 PM  
**Close Date** 5/30/2023 1:23:43 PM

**Labor** \$3,112.57  
**Parts** \$0.00  
**Fluid** \$0.00  
**Commercial** \$716.00  
**Total** \$3,828.57

**Unit Number A7905**

Job Notes		
Job	Change Time	Note
REPAIR REPL UNDERCARRIAGE	2/22/2023 9:50:34 AM	- remove bogies and wash for NDT testing
REPAIR REPL UNDERCARRIAGE	2/22/2023 1:53:53 PM	-removed front & back bogies & washed and prepped for NDT testing.....1098/1042
REPAIR REPL UNDERCARRIAGE	2/27/2023 2:47:24 PM	-took apart bogie and washed, some pins were seized....1042
REPAIR REPL UNDERCARRIAGE	2/28/2023 10:41:24 AM	-took apart further, cleaned.....1042
REPAIR REPL UNDERCARRIAGE	4/28/2023 10:41:18 AM	>PUT PARTS LIST TOGETHER TO OVERHAUL BOGGIES.....518
TRANSPORT COMPLETE UNIT	2/17/2023 7:47:44 AM	SEA TO SKY TRANSPORT FROM STANLEY PARK TO MANITOBA YARD.

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	2/22/2023 9:53:15 AM	03-320	REPAIR REPL UNDERCARRIAGE	4.13	\$524.93	2/22/2023 2:01:19 PM
)	2/22/2023 10:51:06 AM	03-320	REPAIR REPL UNDERCARRIAGE	0.62	\$79.02	2/22/2023 11:28:28 AM
	2/22/2023 12:05:13 PM	03-320	REPAIR REPL UNDERCARRIAGE	2.00	\$254.11	2/22/2023 2:05:24 PM
	2/27/2023 7:46:23 AM	03-320	REPAIR REPL UNDERCARRIAGE	7.15	\$908.44	2/27/2023 2:55:36 PM
	2/28/2023 7:44:57 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.95	\$374.12	2/28/2023 10:41:47 AM
	3/3/2023 6:59:39 AM	03-320	REPAIR REPL UNDERCARRIAGE	0.44	\$55.25	3/3/2023 7:25:50 AM
	3/3/2023 7:04:22 AM	03-320	REPAIR REPL UNDERCARRIAGE	0.17	\$20.96	3/3/2023 7:14:22 AM
	4/27/2023 7:09:27 AM	03-320	REPAIR REPL UNDERCARRIAGE	5.00	\$685.46	4/27/2023 12:09:41 PM
	4/27/2023 7:09:27 AM	03-320	REPAIR REPL UNDERCARRIAGE	(5.00)	(\$685.46)	4/27/2023 12:12:01 PM
	4/27/2023 7:09:27 AM	03-320	REPAIR REPL UNDERCARRIAGE	3.00	\$411.46	4/27/2023 12:12:01 PM
	4/27/2023 1:30:03 PM	03-320	REPAIR REPL UNDERCARRIAGE	1.49	\$204.74	4/27/2023 2:51:33 PM
	4/27/2023 2:25:03 PM	03-320	REPAIR REPL UNDERCARRIAGE	0.41	\$56.32	4/27/2023 2:49:45 PM
	4/27/2023 2:25:03 PM	03-320	REPAIR REPL UNDERCARRIAGE	(0.41)	(\$56.32)	4/27/2023 2:51:33 PM
	4/28/2023 6:38:55 AM	03-320	REPAIR REPL UNDERCARRIAGE	3.04	\$416.67	4/28/2023 10:42:24 AM
	4/28/2023 6:38:55 AM	03-320	REPAIR REPL UNDERCARRIAGE	(3.04)	(\$416.67)	4/28/2023 10:42:53 AM



s.22(1) )	4/28/2023 6:38:58 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.04	\$279.56	4/28/2023 10:42:52 AM
	4/28/2023 10:39:57 AM	03-320	REPAIR REPL UNDERCARRIAGE	0.02	\$3.31	4/28/2023 10:41:26 AM
	4/28/2023 10:39:57 AM	03-320	REPAIR REPL UNDERCARRIAGE	(0.02)	(\$3.31)	4/28/2023 10:42:25 AM
TOTAL				23.99	\$3,112.57	

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
Total					

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
Sea To Sky Transfer	4/11/2023 11:15:49 AM	16-000-000	TRANSPORT COMPLETE UNIT	\$616.00	4/11/2023 11:15:48 AM
City of Vancouver	5/30/2023 1:23:44 PM	AH-000	SHOP CHARGE UNIT SERVICES	\$100.00	5/30/2023 1:23:43 PM
Total				\$716.00	

**WO # 225811**

<b>Open Date</b>	6/8/2023 8:04:12 AM	<b>Labor</b>	\$0.00
<b>Complete Date</b>	6/13/2023 1:04:25 PM	<b>Parts</b>	\$37,750.63
<b>Close Date</b>	10/30/2023 10:09:31 AM	<b>Fluid</b>	\$0.00
		<b>Commercial</b>	\$100.00
		<b>Total</b>	\$37,850.63

Job Notes		
Job	Change Time	Note

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
TOTAL						

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$2,322.98	9/19/2023 12:53:06 PM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$4,403.39	9/19/2023 12:53:06 PM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	8.00	\$272.43	9/19/2023 12:53:07 PM
MANYAR	1023027-001	BAR, L-SPRING	4.00	\$157.71	9/19/2023 12:53:07 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$280.15	9/19/2023 12:53:07 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$3,874.86	9/19/2023 12:53:07 PM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	8.00	\$149.88	9/19/2023 12:53:07 PM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$338.42	9/19/2023 12:53:08 PM
MANYAR	1023117-001	BRACKET, BRK-CYL	8.00	\$1,227.70	9/19/2023 12:53:08 PM
MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	25.00	\$25.35	9/19/2023 12:53:08 PM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	12.00	\$5.83	9/19/2023 12:53:08 PM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$246.98	9/19/2023 12:53:09 PM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$93.61	9/19/2023 12:53:09 PM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$68.10	9/19/2023 12:53:09 PM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.88	9/19/2023 12:53:09 PM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$607.74	9/19/2023 12:53:10 PM
MANYAR	1023033-003	WHEEL, PRESS ON F/COACH #	4.00	\$2,201.92	9/19/2023 12:53:10 PM

MANYAR	1023124-001	SHOE, BRAKE	16.00	\$351.09	9/19/2023 12:53:10 PM
MANYAR	25234501	PIN, CLEVIS 3/16 X 1 ZP	25.00	\$9.24	9/19/2023 12:53:10 PM
MANYAR	10001300	CRATING AND LOADING	1.00	\$674.96	9/19/2023 12:53:11 PM
MANYAR	1023021-001	SPRING	32.00	\$4,237.95	10/23/2023 11:51:29 AM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$478.42	10/23/2023 11:51:30 AM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	8.00	\$1,308.25	10/23/2023 11:51:31 AM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,754.77	10/23/2023 11:51:31 AM
MANYAR	FREIGHT-IB	FREIGHT, GST & PST	1.00	\$2,672.08	10/23/2023 11:51:32 AM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,105.74	10/23/2023 11:51:33 AM
MANYAR	10001300	CRATING AND LOADING	1.00	\$684.03	10/23/2023 11:51:33 AM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$134.38	9/19/2023 12:53:03 PM
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,021.38	9/19/2023 12:53:04 PM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$253.99	9/19/2023 12:53:04 PM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$965.27	9/19/2023 12:53:04 PM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$512.85	9/19/2023 12:53:04 PM
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$401.86	9/19/2023 12:53:05 PM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$993.82	9/19/2023 12:53:05 PM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,755.33	9/19/2023 12:53:05 PM
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$72.55	9/19/2023 12:53:05 PM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.74	9/19/2023 12:53:06 PM
Total				\$37,750.63	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
City of Vancouver	10/30/2023 10:09:31 AM	AH-000	SHOP CHARGE UNIT SERVICES	\$100.00	10/30/2023 10:09:31 AM
Total				\$100.00	

**WO # 234269**

**Open Date** 9/19/2023 6:46:07 PM

**Complete Date**

**Close Date**

**Labor** \$3,772.90

**Parts** \$766.27

**Fluid** \$0.00

**Commercial** \$313.60

**Total** \$4,852.77

**Unit Number A7905**

Job Notes		
Job	Change Time	Note
INSTALL UNDERCARRIAGE	11/10/2023 2:40:42 PM	-installed front/rear bogie -installed air lines -made adjustments to air lines -tested for leaks, good -vacuumed floor....1027/518
REBUILD COMP ASSEMBLY/DISASSEMBLY	9/25/2023 6:01:41 PM	disassembled train bogies and sent frames for sandblasting. this carriage has been decommissioned
TRANSPORT COMPLETE UNIT	9/25/2023 10:51:07 AM	SEA TO SKY TRANSPORT - MANYARD TO EVANS YARD

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	9/19/2023 7:22:48 PM	11-MCH-010	REBUILD COMP ASSEMBLY/DISASSEMBLY	0.64	\$87.30	9/19/2023 8:01:03 PM
	9/19/2023 8:31:35 PM	11-MCH-010	REBUILD COMP ASSEMBLY/DISASSEMBLY	3.79	\$519.31	9/20/2023 12:20:05 AM
	9/19/2023 8:33:35 PM	11-MCH-010	REBUILD COMP ASSEMBLY/DISASSEMBLY	3.76	\$514.74	9/20/2023 12:19:03 AM
	9/19/2023 8:33:35 PM	11-MCH-010	REBUILD COMP ASSEMBLY/DISASSEMBLY	(3.76)	(\$514.74)	9/20/2023 12:20:06 AM
	9/28/2023 6:48:18 AM	12-008-A00	REFINISH ASSEMBLY	2.41	\$330.63	9/28/2023 9:13:08 AM
	9/28/2023 8:11:17 AM	12-012-MT0	REFINISH MOUNT	3.30	\$519.66	9/28/2023 11:29:15 AM
	9/28/2023 11:57:37 AM	12-012-MT0	REFINISH MOUNT	3.02	\$475.52	9/28/2023 2:58:46 PM
	9/28/2023 11:57:37 AM	12-012-MT0	REFINISH MOUNT	(3.02)	(\$475.52)	9/29/2023 6:09:25 AM
	9/28/2023 11:57:37 AM	12-012-MT0	REFINISH MOUNT	3.04	\$478.76	9/29/2023 6:09:25 AM
	9/29/2023 6:28:57 AM	12-012-MT0	REFINISH MOUNT	1.40	\$220.15	9/29/2023 7:56:34 AM
	9/29/2023 6:41:16 AM	12-008-A00	REFINISH ASSEMBLY	1.50	\$205.39	9/29/2023 8:11:14 AM
	10/19/2023 12:00:00 PM	12-008-A00	REFINISH ASSEMBLY	0.01	\$1.03	10/20/2023 6:11:07 AM
	10/19/2023 12:00:13 PM	12-008-A00	REFINISH ASSEMBLY	0.00	\$0.53	10/19/2023 12:00:29 PM
	10/19/2023 12:00:13 PM	12-008-A00	REFINISH ASSEMBLY	0.00	(\$0.53)	10/20/2023 6:11:08 AM

s.22(1)	11/10/2023 7:11:39 AM	14-320	INSTALL UNDERCARRIAGE	5.18	\$710.23	11/10/2023 12:22:43 PM
	11/10/2023 7:11:39 AM	14-320	INSTALL UNDERCARRIAGE	(5.18)	(\$710.23)	11/10/2023 2:23:57 PM
	11/10/2023 7:13:23 AM	14-320	INSTALL UNDERCARRIAGE	4.89	\$670.54	11/10/2023 12:07:07 PM
	11/10/2023 7:13:23 AM	14-320	INSTALL UNDERCARRIAGE	(4.89)	(\$670.54)	11/10/2023 12:08:00 PM
	11/10/2023 7:13:23 AM	14-320	INSTALL UNDERCARRIAGE	4.23	\$579.21	11/10/2023 12:08:00 PM
	11/10/2023 7:15:39 AM	14-320	INSTALL UNDERCARRIAGE	4.24	\$580.77	11/10/2023 2:23:57 PM
	11/10/2023 12:00:00 PM	14-320	INSTALL UNDERCARRIAGE	1.83	\$250.71	11/10/2023 2:23:57 PM
	11/10/2023 12:47:05 PM	14-320	INSTALL UNDERCARRIAGE	1.05	\$143.20	11/10/2023 1:49:52 PM
	11/10/2023 12:47:05 PM	14-320	INSTALL UNDERCARRIAGE	(1.05)	(\$143.20)	11/10/2023 2:23:58 PM
TOTAL			26.38	\$3,772.90		

Materials					
Location	Part No	Description	Qty	Part Cost	Change Time
MANYAR	SS-400-3	FITTING, UNION TEE	2.00	\$215.50	9/28/2023 1:42:53 PM
MANYAR	SS-400-2-2	FITTING, ELBOW	4.00	\$182.03	9/28/2023 1:42:54 PM
MANYAR	SS-400-4-4TTF	FITTING, TEE	1.00	\$125.25	9/28/2023 1:42:54 PM
MANYAR	74619	U-BOLT, 1/4"-20 X 1/2"	14.00	\$53.57	11/3/2023 5:27:34 PM
MANYAR	74620	U-BOLT, 1/4"-20 X 3/4"	14.00	\$35.48	11/3/2023 5:27:34 PM
MANYAR	TUBE 1/4 X .035 SST316	TUBING, HYD 1/4"X.035" S.S.	20.00	\$77.22	11/3/2023 3:57:58 PM
MANYAR	TUBE 1/4 X .035 SST316	TUBING, HYD 1/4"X.035" S.S.	20.00	\$77.22	9/22/2023 6:42:43 PM
Total				\$766.27	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	10/25/2023 1:01:46 PM	11-MCH-010	REBUILD COMP ASSEMBLY/DISASSEMBLY	\$313.60	10/25/2023 1:01:46 PM
Total				\$313.60	

**WO # 226134**

**Open Date** 6/12/2023 3:39:40 PM  
**Complete Date** 11/30/2023 12:38:49 PM  
**Close Date**

**Labor** \$12,832.25  
**Parts** \$50,970.72  
**Fluid** \$0.00  
**Commercial** \$156.80  
**Total** \$63,959.77

**Unit Number A7906**

Job Notes		
Job	Change Time	Note
FABRICATE MISC BRACKETS	10/26/2023 9:44:33 AM	fabricate and weld in airline brackets...689
INSTALL UNDERCARRIAGE	11/14/2023 10:06:22 AM	Installed bogie assemblies, check brakes with shop air, no leaks working good.....1027
REPAIR REPL AIR LINE	10/12/2023 2:55:40 PM	Made most of the lines and wrapped them with loom. Ran out of fitting, more on order. 1075
REPAIR REPL AIR LINE	10/13/2023 1:12:53 PM	Made all the lines and put the loom on them, Unit just needs 2 quick connectors. connectors on order. 1075
REPAIR REPL AIR LINE	10/19/2023 1:02:10 PM	Inspected lines and connectors for air leaks. Waiting for holes to secure the hoses. 1075
REPAIR REPL AIR LINE	10/31/2023 12:46:39 PM	-secured hoses...1042
REPAIR REPL ASSEMBLY/DISASSEMBLY	11/12/2023 5:58:38 PM	rebuilt carriage bogies
REPAIR REPL FRAME BOLTS	11/28/2023 9:30:57 AM	replace bolts on side of chair and install acorn nuts on both sides , as per inspection .....518, 1042
REPAIR REPL HOOK TOW	11/28/2023 8:24:57 AM	replace tow bars
REPAIR REPL HOOK TOW	11/30/2023 12:33:47 PM	new tow bar with new hardware done.....1042,518,1075
REPAIR REPL SYSTEM	6/12/2023 3:40:03 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.
TRANSPORT COMPLETE UNIT	9/25/2023 10:57:43 AM	SEA TO SKY TRANSPORT - STANLEY PARK TO MANYARD
TRANSPORT COMPLETE UNIT	11/10/2023 9:48:37 AM	SEA TO SKY TRANSPORT - MANYARDST O TANLEY PARK Nov. 13

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	10/5/2023 7:41:37 AM	03-320-000	REPAIR REPL SYSTEM	3.81	\$521.48	10/5/2023 12:13:45 PM
	10/5/2023 7:41:37 AM	03-320-000	REPAIR REPL SYSTEM	4.52	\$619.89	10/5/2023 12:13:09 PM
	10/5/2023 7:41:37 AM	03-320-000	REPAIR REPL SYSTEM	(4.52)	(\$619.89)	10/5/2023 12:13:46 PM
	10/10/2023 7:29:46 AM	02-000-000	CLEAN COMPLETE UNIT	2.38	\$325.83	10/10/2023 9:52:29 AM
	10/11/2023 6:29:56 AM	02-000-000	CLEAN COMPLETE UNIT	1.41	\$192.79	10/11/2023 7:54:23 AM

s.22(1)

	10/12/2023 6:53:15 AM	03-051-LS0	REPAIR REPL AIR LINE	4.61	\$631.95	10/12/2023 11:30:02 AM
	10/12/2023 12:01:26 PM	03-051-LS0	REPAIR REPL AIR LINE	2.98	\$407.73	10/13/2023 2:44:19 PM
	10/12/2023 12:01:26 PM	03-051-LS0	REPAIR REPL AIR LINE	2.97	\$407.42	10/12/2023 2:59:53 PM
	10/12/2023 12:01:26 PM	03-051-LS0	REPAIR REPL AIR LINE	(2.97)	(\$407.42)	10/13/2023 2:44:19 PM
	10/12/2023 8:32:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.83	\$387.63	10/12/2023 11:26:07 PM
	10/12/2023 8:34:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.80	\$383.07	10/12/2023 11:22:17 PM
	10/12/2023 8:34:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(2.80)	(\$383.07)	10/12/2023 11:26:07 PM
	10/13/2023 7:43:39 AM	03-051-LS0	REPAIR REPL AIR LINE	1.51	\$207.36	10/13/2023 9:14:32 AM
	10/13/2023 10:14:05 AM	03-051-LS0	REPAIR REPL AIR LINE	1.28	\$176.01	10/13/2023 11:31:13 AM
	10/13/2023 12:01:10 PM	03-051-LS0	REPAIR REPL AIR LINE	1.20	\$164.02	10/13/2023 1:13:01 PM
	10/16/2023 7:08:27 AM	12-008-A00	REFINISH ASSEMBLY	4.36	\$686.57	10/16/2023 2:33:57 PM
	10/16/2023 7:08:27 AM	12-008-A00	REFINISH ASSEMBLY	4.29	\$675.72	10/16/2023 11:25:53 AM
	10/16/2023 7:08:27 AM	12-008-A00	REFINISH ASSEMBLY	(4.29)	(\$675.72)	10/16/2023 2:33:57 PM
	10/16/2023 11:55:07 AM	12-008-A00	REFINISH ASSEMBLY	3.06	\$482.04	10/16/2023 2:58:46 PM
	10/16/2023 11:55:07 AM	12-008-A00	REFINISH ASSEMBLY	(3.06)	(\$482.04)	10/17/2023 6:09:32 AM
	10/16/2023 12:00:00 PM	12-008-A00	REFINISH ASSEMBLY	3.00	\$472.50	10/17/2023 6:09:32 AM
	10/16/2023 7:10:50 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	0.86	\$118.39	10/16/2023 8:02:42 PM
	10/16/2023 8:38:28 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.59	\$491.98	10/17/2023 12:13:59 AM
	10/17/2023 6:25:21 AM	12-008-A00	REFINISH ASSEMBLY	1.29	\$202.96	10/17/2023 7:42:40 AM
	10/17/2023 6:25:21 AM	12-008-A00	REFINISH ASSEMBLY	(1.29)	(\$202.96)	10/17/2023 1:54:55 PM
	10/17/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	1.21	\$190.75	10/17/2023 1:54:55 PM
	10/17/2023 6:08:06 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.87	\$256.65	10/17/2023 8:00:31 PM
	10/17/2023 8:30:02 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.88	\$531.41	10/18/2023 12:23:17 AM
	10/17/2023 8:36:02 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.78	\$517.71	10/18/2023 12:22:49 AM
	10/17/2023 8:36:02 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.78)	(\$517.71)	10/18/2023 12:23:18 AM
	10/18/2023 6:05:55 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.90	\$260.57	10/18/2023 8:00:03 PM
	10/18/2023 8:30:41 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.71	\$508.27	10/19/2023 12:14:31 AM
	10/18/2023 8:33:41 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.66	\$501.42	10/19/2023 12:13:19 AM
	10/18/2023 8:33:41 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.66)	(\$501.42)	10/19/2023 12:14:32 AM
	10/19/2023 7:18:50 AM	03-051-LS0	REPAIR REPL AIR LINE	4.23	\$579.43	10/19/2023 11:32:37 AM
	10/19/2023 12:02:57 PM	03-051-LS0	REPAIR REPL AIR LINE	1.13	\$155.42	10/19/2023 1:11:02 PM
	10/19/2023 5:52:54 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	2.15	\$295.04	10/19/2023 8:02:07 PM
	10/19/2023 8:31:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.71	\$508.61	10/20/2023 12:14:49 AM
	10/19/2023 8:33:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.68	\$504.05	10/20/2023 12:14:16 AM

s.22(1)	10/19/2023 8:33:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.68)	(\$504.05)	10/20/2023 12:14:49 AM
	10/26/2023 7:44:40 AM	21-010-B49	FABRICATE MISC BRACKETS	2.00	\$274.42	10/26/2023 9:44:55 AM
	10/26/2023 9:59:18 AM	12-008-A00	REFINISH ASSEMBLY	0.04	\$5.86	10/26/2023 10:01:34 AM
	10/31/2023 10:20:03 AM	03-051-LS0	REPAIR REPL AIR LINE	1.93	\$264.75	11/1/2023 8:49:36 AM
	10/31/2023 10:20:03 AM	03-051-LS0	REPAIR REPL AIR LINE	2.45	\$335.23	10/31/2023 12:46:56 PM
	10/31/2023 10:20:03 AM	03-051-LS0	REPAIR REPL AIR LINE	(2.45)	(\$335.23)	11/1/2023 8:49:36 AM
	11/9/2023 6:25:02 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	1.66	\$227.99	11/9/2023 8:04:54 PM
	11/9/2023 8:34:56 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.76	\$515.58	11/10/2023 12:21:09 AM
	11/9/2023 8:36:56 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.73	\$511.01	11/10/2023 12:20:45 AM
	11/9/2023 8:36:56 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.73)	(\$511.01)	11/10/2023 12:21:10 AM
	11/11/2023 7:44:34 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.19	\$1,396.22	11/11/2023 5:56:04 PM
	11/12/2023 7:49:04 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.16	\$1,392.03	11/12/2023 5:58:43 PM
	11/28/2023 12:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 12:30:13 PM
	11/28/2023 12:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 12:30:13 PM
	11/29/2023 12:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 12:13:21 PM
	11/29/2023 12:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 12:13:21 PM
11/29/2023 12:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 12:13:21 PM	
TOTAL			92.38	\$12,832.25		

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.97	10/18/2023 12:46:54 PM	
MANYAR	CB807701	CLEANER, GLASS WINDEX 765ML	1.00	\$9.98	10/19/2023 7:22:11 AM	
MANYAR	762968	TIE STRAP, NYLON 15"	1.00	\$58.70	10/12/2023 2:20:58 PM	
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	15.00	\$89.56	10/12/2023 2:53:31 PM	
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	2.00	\$3.26	10/13/2023 1:09:15 PM	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.92	10/13/2023 12:15:16 PM	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.92	10/13/2023 12:18:11 PM	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	(2.00)	(\$20.92)	10/13/2023 12:18:10 PM	
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	(2.00)	(\$3.26)	10/13/2023 1:09:15 PM	
MANYAR	S778	COUPLING, MALE AIR 1/4 NPT FEM	2.00	\$10.89	10/13/2023 1:09:53 PM	
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:08 PM	
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,188.14	9/18/2023 10:55:20 AM	
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$4.28	9/18/2023 10:55:20 AM	



MANYAR	1023027-001	BAR, L-SPRING	8.00	\$351.53	9/18/2023 10:55:20 AM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	4.00	\$172.88	9/18/2023 10:55:20 AM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$538.52	9/18/2023 10:55:21 AM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$786.84	9/18/2023 10:55:21 AM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$5,408.32	9/18/2023 10:55:21 AM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$584.41	9/18/2023 10:55:21 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$282.87	9/18/2023 10:55:21 AM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,499.01	9/18/2023 10:55:21 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$1,075.71	9/18/2023 10:55:21 AM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$771.95	9/18/2023 10:55:22 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$99.83	9/18/2023 10:55:22 AM
MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$907.89	9/18/2023 10:55:22 AM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$907.89	9/18/2023 10:55:22 AM
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$447.86	9/18/2023 10:55:22 AM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,157.48	9/18/2023 10:55:22 AM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$554.08	9/18/2023 10:55:22 AM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$962.92	9/18/2023 10:55:22 AM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$224.99	9/18/2023 10:55:23 AM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$684.12	9/18/2023 10:55:23 AM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$721.23	9/18/2023 10:55:23 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$284.54	9/18/2023 10:55:23 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$8.00	9/18/2023 10:55:23 AM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,955.88	9/18/2023 10:55:23 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,404.03	9/18/2023 10:55:23 AM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$293.59	9/18/2023 10:55:24 AM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$152.82	9/18/2023 10:55:24 AM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.89	9/18/2023 10:55:15 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.45	9/18/2023 10:55:15 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$1.08	9/18/2023 10:55:15 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$874.39	9/18/2023 10:55:15 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$8.56	9/18/2023 10:55:15 AM
MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$5.44	9/18/2023 10:55:15 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.55	9/18/2023 10:55:15 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$1.00	9/18/2023 10:55:16 AM

MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.55	9/18/2023 10:55:16 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$13.00	9/18/2023 10:55:16 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$3.11	9/18/2023 10:55:16 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$5.44	9/18/2023 10:55:16 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.55	9/18/2023 10:55:16 AM
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$14.89	9/18/2023 10:55:17 AM
MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,139.15	9/18/2023 10:55:17 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$3.11	9/18/2023 10:55:17 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$3.11	9/18/2023 10:55:17 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.33	9/18/2023 10:55:17 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$3.11	9/18/2023 10:55:17 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.55	9/18/2023 10:55:17 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:55:17 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:55:18 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:55:18 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.55	9/18/2023 10:55:18 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	20.00	\$3.89	9/18/2023 10:55:18 AM
MANYAR	20934000	BRAKE SHOE, 1023124-000	16.00	\$519.52	9/18/2023 10:55:18 AM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$12.45	9/18/2023 10:55:18 AM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$3.05	9/18/2023 10:55:18 AM
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$47.81	9/18/2023 10:55:19 AM
MANYAR	1022115-002	SPACER	1.00	\$47.44	9/18/2023 10:55:19 AM
MANYAR	1022115-003	SPACER	1.00	\$41.04	9/18/2023 10:55:19 AM
MANYAR	1022115-003	SPACER	1.00	\$41.04	9/18/2023 10:55:19 AM
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$65.61	9/18/2023 10:55:19 AM
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$399.64	9/18/2023 10:55:20 AM
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$527.41	9/18/2023 10:55:20 AM
MANYAR	45-1424	STRAP, RTCH TIE 4PK 1200LB	1.00	\$34.76	10/5/2023 7:20:54 PM
MANYAR	PF6V	TAPE, FLAGGING	1.00	\$4.13	10/5/2023 7:02:33 PM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$94.55	9/18/2023 10:55:11 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$94.55	9/18/2023 10:55:12 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$173.24	9/18/2023 10:55:12 AM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$153.99	9/18/2023 10:55:12 AM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$98.99	9/18/2023 10:55:12 AM

MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$180.54	9/18/2023 10:55:12 AM
MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$12.45	9/18/2023 10:55:12 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$79.99	9/18/2023 10:55:12 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	16.00	\$4.00	9/18/2023 10:55:13 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$6.00	9/18/2023 10:55:13 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$17.33	9/18/2023 10:55:13 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,138.37	9/18/2023 10:55:10 AM
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$52.28	9/18/2023 10:55:10 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$7.78	9/18/2023 10:55:10 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$9.56	9/18/2023 10:55:10 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$9.56	9/18/2023 10:55:11 AM
MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	16.00	\$18.00	9/18/2023 10:55:11 AM
MANYAR	25237700	PIN CLEVIS, 1/2X21/2 ZP	8.00	\$18.11	9/18/2023 10:55:11 AM
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$85.44	9/18/2023 10:55:11 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$213.54	9/18/2023 10:55:11 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.89	9/18/2023 10:55:13 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	24.00	\$12.66	9/18/2023 10:55:13 AM
MANYAR	60766800	HHCS, 3/8-16X1 1/4 GR5 Z/P	8.00	\$3.11	9/18/2023 10:55:13 AM
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$143.39	9/18/2023 10:55:13 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$10.95	9/18/2023 10:55:14 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$8.22	9/18/2023 10:55:14 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$5.11	9/18/2023 10:55:14 AM
MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$96.77	9/18/2023 10:55:14 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	13.00	\$2.53	9/18/2023 10:55:14 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$6.22	9/18/2023 10:55:14 AM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.55	9/18/2023 10:55:14 AM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 2:22:57 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 2:22:57 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 2:22:57 PM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	23.00	\$3.99	10/24/2023 2:22:58 PM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 2:25:02 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	3.00	\$523.52	10/24/2023 2:25:02 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 2:25:02 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 2:25:02 PM

MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 2:25:03 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 2:25:03 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 2:25:03 PM
MANYAR	CDA1600	PAINT, SPRAY ENAMEL BLACK	4.00	\$59.26	11/9/2023 5:07:18 PM
MANYAR	01050-19	GREASE, PYROPLEX BLUE TUBE	10.00	\$146.72	10/19/2023 6:01:54 PM
MANYAR	58014	WRENCH, ALLEN STD AWL 3/16	2.00	\$5.79	10/16/2023 10:58:13 PM
MANYAR	2862SP	PAINT, SPRAY BLACK	2.00	\$52.09	10/18/2023 3:38:46 PM
MANYAR	CDA1600	PAINT, SPRAY ENAMEL BLACK	4.00	\$59.26	10/18/2023 3:38:46 PM
MANYAR	70031010	BRUSH, PAINT BRISTLE 1"	1.00	\$1.56	10/26/2023 9:45:04 AM
Total				\$50,970.72	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	10/25/2023 12:49:44 PM	03-320-000	REPAIR REPL SYSTEM	\$156.80	10/25/2023 12:49:43 PM
Total				\$156.80	

**WO # 226135**

**Open Date** 6/12/2023 3:40:29 PM  
**Complete Date** 11/30/2023 12:40:10 PM  
**Close Date**

**Labor** \$16,221.60  
**Parts** \$52,087.16  
**Fluid** \$0.00  
**Commercial** \$397.60  
**Total** \$68,706.36

**Unit Number A7907**

Job Notes		
Job	Change Time	Note
REFINISH ASSEMBLY	11/14/2023 10:29:38 AM	Refinish - Bogies
REFINISH ASSEMBLY	11/15/2023 2:50:27 PM	Primed & Refinished bogies top and bottom. 2001
REPAIR REPL AIR LINE	11/6/2023 7:22:06 AM	-started air line re/re...1027
REPAIR REPL AIR LINE	11/9/2023 2:43:48 PM	-continued with air line re/re....1042
REPAIR REPL ASSEMBLY/DISASSEMBLY	11/20/2023 5:05:08 PM	rebuilt bogie assemblies
REPAIR REPL DRILL/TAP	11/15/2023 12:24:21 PM	Drill out roller holes to 1/2 inch fine thread
REPAIR REPL DRILL/TAP	11/15/2023 12:29:54 PM	correction 1/2 course thread
REPAIR REPL FRAME BOLTS	11/28/2023 9:31:44 AM	replace bolts on side of chair and install acorn nuts on both sides , as per inspection .....518, 1042
REPAIR REPL HOOK TOW	11/28/2023 8:24:10 AM	replace tow bars
REPAIR REPL HOOK TOW	11/30/2023 12:33:03 PM	new tow bar with new hardware done.....1042,518,1075
REPAIR REPL MANUFACTURING	11/22/2023 7:06:42 AM	fab clips for air lines...689
REPAIR REPL MISC BRACKETS	11/15/2023 11:11:04 AM	remove rust bubbles/flaking from under carriage and paint...689
REPAIR REPL MISC BRACKETS	11/22/2023 7:05:48 AM	weld on clips for air lines...689
REPAIR REPL SYSTEM	6/12/2023 3:40:55 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.
REPAIR REPL SYSTEM	10/31/2023 2:19:33 PM	-removed air lines and keepers, lifted and removed bogies, put on jack stands, put bogies on pallets and strapped them down....1042
REPAIR REPL UNDERCARRIAGE	11/5/2023 3:45:12 PM	Put bogie assemblies on bench. Tore down both assemblies removed all parts. Washed frame and put parts put on pallet for sand blasting and paint.....591 Cleaned axle assemblies and removes all bearing and bearing caps. Put axes and wheels it parts washer and put on pallet. Ready to be painted and ready for new bearing.....591
REPAIR REPL UNDERCARRIAGE	11/6/2023 10:55:42 AM	> Installed bolts in every threaded hole so they can be sand blasted.....518
TRANSPORT COMPLETE UNIT	9/25/2023 10:55:40 AM	SEA TO SKY TRANSPORT - STANLEY PARK YARD MOVE
TRANSPORT COMPLETE UNIT	10/26/2023 8:49:19 AM	SEA TO SKY - STANLEY PARK TO MANHEQ.

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	10/30/2023 2:02:38 PM	03-320-000	REPAIR REPL SYSTEM	0.89	\$122.39	10/30/2023 2:56:15 PM
	10/30/2023 2:02:38 PM	03-320-000	REPAIR REPL SYSTEM	(0.89)	(\$122.39)	10/31/2023 7:24:06 AM
	10/30/2023 2:02:38 PM	03-320-000	REPAIR REPL SYSTEM	0.96	\$130.99	10/31/2023 7:24:05 AM
	10/31/2023 12:46:52 PM	03-320-000	REPAIR REPL SYSTEM	2.22	\$303.99	11/1/2023 8:48:44 AM
	10/31/2023 12:46:52 PM	03-320-000	REPAIR REPL SYSTEM	2.20	\$301.55	10/31/2023 2:58:57 PM
	10/31/2023 12:46:52 PM	03-320-000	REPAIR REPL SYSTEM	(2.20)	(\$301.55)	11/1/2023 8:48:45 AM
	11/2/2023 12:15:51 PM	03-320-000	REPAIR REPL SYSTEM	2.74	\$374.81	11/3/2023 6:44:07 AM
	11/2/2023 12:15:51 PM	03-320-000	REPAIR REPL SYSTEM	2.66	\$364.61	11/2/2023 2:55:34 PM
	11/2/2023 12:15:51 PM	03-320-000	REPAIR REPL SYSTEM	(2.66)	(\$364.61)	11/3/2023 6:44:08 AM
	11/4/2023 9:40:02 AM	03-320	REPAIR REPL UNDERCARRIAGE	6.07	\$832.20	11/4/2023 3:44:31 PM
	11/5/2023 5:53:12 AM	03-320	REPAIR REPL UNDERCARRIAGE	9.08	\$1,244.19	11/5/2023 2:58:07 PM
	11/5/2023 5:53:12 AM	03-320	REPAIR REPL UNDERCARRIAGE	(9.08)	(\$1,244.19)	11/5/2023 3:02:29 PM
	11/5/2023 6:00:00 AM	03-320	REPAIR REPL UNDERCARRIAGE	10.00	\$1,370.00	11/5/2023 3:02:29 PM
	11/5/2023 10:28:07 AM	03-051-LS0	REPAIR REPL AIR LINE	2.46	\$337.02	11/5/2023 12:56:53 PM
	11/6/2023 8:52:13 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.06	\$282.33	11/6/2023 10:56:31 AM
	11/6/2023 10:52:13 AM	03-320	REPAIR REPL UNDERCARRIAGE	0.06	\$8.33	11/6/2023 10:55:54 AM
	11/6/2023 10:52:13 AM	03-320	REPAIR REPL UNDERCARRIAGE	(0.06)	(\$8.33)	11/6/2023 10:56:31 AM
	11/7/2023 3:43:32 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	4.31	\$589.79	11/7/2023 8:01:51 PM
	11/7/2023 8:32:19 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.81	\$522.08	11/8/2023 12:20:59 AM
	11/8/2023 12:03:23 PM	03-010-B49	REPAIR REPL MISC BRACKETS	1.94	\$266.24	11/8/2023 2:00:00 PM
	11/8/2023 3:17:28 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	4.73	\$647.33	11/8/2023 8:00:59 PM
	11/8/2023 8:30:48 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.74	\$511.70	11/9/2023 12:16:53 AM
	11/8/2023 8:34:48 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.67	\$502.56	11/9/2023 12:14:56 AM
	11/8/2023 8:34:48 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.67)	(\$502.56)	11/9/2023 12:16:54 AM
	11/9/2023 7:28:19 AM	03-051-LS0	REPAIR REPL AIR LINE	7.53	\$1,031.34	11/10/2023 6:43:29 AM
	11/9/2023 7:28:19 AM	03-051-LS0	REPAIR REPL AIR LINE	(7.53)	(\$1,031.34)	11/10/2023 6:44:14 AM
	11/9/2023 7:28:19 AM	03-051-LS0	REPAIR REPL AIR LINE	4.03	\$551.84	11/10/2023 6:44:13 AM
	11/9/2023 7:28:19 AM	03-051-LS0	REPAIR REPL AIR LINE	7.51	\$1,028.38	11/9/2023 2:58:43 PM
	11/9/2023 7:28:19 AM	03-051-LS0	REPAIR REPL AIR LINE	(7.51)	(\$1,028.38)	11/10/2023 6:43:29 AM
	11/9/2023 12:00:00 PM	03-051-LS0	REPAIR REPL AIR LINE	3.00	\$411.00	11/10/2023 6:44:13 AM
	11/9/2023 1:59:30 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	6.09	\$833.87	11/9/2023 8:04:43 PM
	11/9/2023 8:34:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.77	\$515.84	11/10/2023 12:21:24 AM

s.22(1)	11/9/2023 8:36:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	3.73	\$511.28	11/10/2023 12:20:26 AM
	11/9/2023 8:36:29 PM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	(3.73)	(\$511.28)	11/10/2023 12:21:24 AM
	11/10/2023 1:49:48 PM	03-051-LS0	REPAIR REPL AIR LINE	0.56	\$76.11	11/10/2023 2:23:09 PM
	11/11/2023 7:44:19 AM	03-MCH-010	REPAIR REPL ASSEMBLY/DISASSEMBLY	10.20	\$1,397.21	11/11/2023 5:56:15 PM
	11/14/2023 11:58:17 AM	12-008-A00	REFINISH ASSEMBLY	3.01	\$412.45	11/14/2023 2:58:55 PM
	11/14/2023 11:58:17 AM	12-008-A00	REFINISH ASSEMBLY	(3.01)	(\$412.45)	11/15/2023 6:06:50 AM
	11/14/2023 11:58:17 AM	12-008-A00	REFINISH ASSEMBLY	3.03	\$414.92	11/15/2023 6:06:49 AM
	11/15/2023 6:25:20 AM	12-008-A00	REFINISH ASSEMBLY	2.81	\$385.27	11/15/2023 9:14:05 AM
	11/15/2023 6:25:20 AM	12-008-A00	REFINISH ASSEMBLY	(2.81)	(\$385.27)	11/15/2023 2:37:41 PM
	11/15/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	2.73	\$374.62	11/15/2023 2:37:41 PM
	11/15/2023 6:57:13 AM	03-010-B49	REPAIR REPL MISC BRACKETS	4.24	\$580.50	11/15/2023 11:11:29 AM
	11/15/2023 10:11:31 AM	12-008-A00	REFINISH ASSEMBLY	1.31	\$179.20	11/15/2023 2:37:41 PM
	11/15/2023 10:11:31 AM	12-008-A00	REFINISH ASSEMBLY	1.19	\$163.22	11/15/2023 11:23:01 AM
	11/15/2023 10:11:31 AM	12-008-A00	REFINISH ASSEMBLY	(1.19)	(\$163.22)	11/15/2023 2:37:41 PM
	11/15/2023 10:47:56 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.03	\$277.77	11/15/2023 12:49:37 PM
	11/15/2023 12:00:27 PM	12-008-A00	REFINISH ASSEMBLY	2.98	\$408.34	11/15/2023 2:59:18 PM
	11/15/2023 12:00:27 PM	12-008-A00	REFINISH ASSEMBLY	(2.98)	(\$408.34)	11/16/2023 6:13:03 AM
	11/15/2023 12:00:27 PM	12-008-A00	REFINISH ASSEMBLY	2.99	\$409.97	11/16/2023 6:13:02 AM
	11/15/2023 2:33:01 PM	03-MCH-020	REPAIR REPL DRILL/TAP	0.45	\$61.61	11/16/2023 7:05:27 AM
	11/15/2023 2:33:01 PM	03-MCH-020	REPAIR REPL DRILL/TAP	0.63	\$85.85	11/15/2023 3:10:39 PM
	11/15/2023 2:33:01 PM	03-MCH-020	REPAIR REPL DRILL/TAP	(0.63)	(\$85.85)	11/16/2023 7:05:27 AM
	11/16/2023 7:30:23 AM	03-051-LS0	REPAIR REPL AIR LINE	(4.78)	(\$655.16)	11/16/2023 2:46:21 PM
	11/16/2023 7:30:23 AM	03-051-LS0	REPAIR REPL AIR LINE	3.99	\$547.12	11/16/2023 2:46:20 PM
	11/16/2023 7:30:23 AM	03-051-LS0	REPAIR REPL AIR LINE	4.78	\$655.16	11/16/2023 12:17:20 PM
	11/17/2023 10:43:24 AM	03-010	REPAIR REPL MANUFACTURING	0.52	\$71.28	11/17/2023 11:14:39 AM
	11/19/2023 11:00:00 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.00	\$274.00	11/20/2023 6:39:16 AM
	11/20/2023 6:33:36 AM	03-010	REPAIR REPL MANUFACTURING	0.21	\$28.85	11/20/2023 6:46:16 AM
	11/20/2023 7:07:08 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.59	\$354.18	11/20/2023 2:48:22 PM
	11/20/2023 7:27:08 AM	03-320	REPAIR REPL UNDERCARRIAGE	2.25	\$308.52	11/20/2023 9:42:20 AM
	11/20/2023 7:27:08 AM	03-320	REPAIR REPL UNDERCARRIAGE	(2.25)	(\$308.52)	11/20/2023 2:48:23 PM
	11/20/2023 7:36:09 AM	03-010	REPAIR REPL MANUFACTURING	2.46	\$336.94	11/20/2023 10:03:45 AM
	11/20/2023 7:42:40 AM	03-320	REPAIR REPL UNDERCARRIAGE	7.24	\$991.80	11/20/2023 2:57:03 PM
	11/20/2023 7:42:40 AM	03-320	REPAIR REPL UNDERCARRIAGE	(7.24)	(\$991.80)	11/21/2023 8:08:27 AM
	11/20/2023 7:42:40 AM	03-320	REPAIR REPL UNDERCARRIAGE	7.29	\$998.58	11/21/2023 8:08:27 AM

s.22(1)	11/20/2023 7:42:40 AM	03-320	REPAIR REPL UNDERCARRIAGE	(7.29)	(\$998.58)	11/21/2023 8:09:01 AM
	11/20/2023 7:42:40 AM	03-320	REPAIR REPL UNDERCARRIAGE	3.79	\$519.08	11/21/2023 8:09:00 AM
	11/20/2023 12:00:00 PM	03-320	REPAIR REPL UNDERCARRIAGE	3.00	\$411.00	11/21/2023 8:09:00 AM
	11/20/2023 12:07:42 PM	03-010	REPAIR REPL MANUFACTURING	2.90	\$397.68	11/20/2023 3:01:52 PM
	11/21/2023 12:46:39 PM	03-010-B49	REPAIR REPL MISC BRACKETS	2.48	\$339.42	11/21/2023 3:15:18 PM
	11/22/2023 7:05:12 AM	03-010-B49	REPAIR REPL MISC BRACKETS	0.01	\$1.75	11/22/2023 7:06:00 AM
	11/22/2023 7:05:58 AM	03-010	REPAIR REPL MANUFACTURING	0.02	\$2.36	11/22/2023 7:07:07 AM
	11/28/2023 10:34:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 12:26:52 PM
	11/28/2023 10:34:00 AM	03-077-N90	REPAIR REPL FRAME BOLTS	1.00	\$137.00	11/28/2023 12:27:23 PM
	11/29/2023 1:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 1:38:27 PM
	11/29/2023 1:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 1:38:27 PM
	11/29/2023 1:00:00 PM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 1:38:27 PM
TOTAL				118.41	\$16,221.60	

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	ZER2862ARGA	PAINT, ZERORUST BLACK	1.00	\$182.09	11/16/2023 4:55:24 PM	
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	1.00	\$8.89	11/9/2023 1:55:54 PM	
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	50.00	\$298.53	11/9/2023 1:55:54 PM	
MANYAR	762968	TIE STRAP, NYLON 15"	1.00	\$58.71	11/16/2023 9:36:23 AM	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.97	11/9/2023 9:39:55 AM	
MANYAR	777BK	COUPLING, AIR MALE 1/4 MPT	2.00	\$3.26	11/9/2023 9:39:55 AM	
MANYAR	X101-C	TEE, EXTRUDED 3/8" FPT	3.00	\$26.66	11/9/2023 9:39:56 AM	
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:08 PM	
MANYAR	H-7830	CONTAINER, COLLAPSIBLE	1.00	\$643.50	9/15/2023 1:25:09 PM	
MANYAR	1022113-001	WASHER, AXLE	1.00	\$131.24	9/18/2023 10:10:37 AM	
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$47.81	9/18/2023 10:10:38 AM	
MANYAR	1022115-002	SPACER	1.00	\$47.44	9/18/2023 10:10:38 AM	
MANYAR	1022115-003	SPACER	1.00	\$41.04	9/18/2023 10:10:38 AM	
MANYAR	1022115-003	SPACER	1.00	\$41.04	9/18/2023 10:10:38 AM	
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$4.28	9/18/2023 10:10:38 AM	
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$65.61	9/18/2023 10:10:38 AM	
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$399.64	9/18/2023 10:10:38 AM	
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$527.41	9/18/2023 10:10:39 AM	



MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,188.14	9/18/2023 10:10:39 AM
MANYAR	1023027-001	BAR, L-SPRING	8.00	\$351.53	9/18/2023 10:10:39 AM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	4.00	\$172.88	9/18/2023 10:10:39 AM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$538.52	9/18/2023 10:10:39 AM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$786.84	9/18/2023 10:10:39 AM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$5,408.32	9/18/2023 10:10:40 AM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$584.41	9/18/2023 10:10:40 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$99.83	9/18/2023 10:10:40 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$282.87	9/18/2023 10:10:40 AM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,499.01	9/18/2023 10:10:40 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$1,075.71	9/18/2023 10:10:40 AM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$771.95	9/18/2023 10:10:41 AM
MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$907.89	9/18/2023 10:10:41 AM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$907.89	9/18/2023 10:10:41 AM
MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$447.86	9/18/2023 10:10:41 AM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,157.48	9/18/2023 10:10:41 AM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$554.08	9/18/2023 10:10:41 AM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$962.92	9/18/2023 10:10:42 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$8.00	9/18/2023 10:10:42 AM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$224.99	9/18/2023 10:10:42 AM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$684.12	9/18/2023 10:10:42 AM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$721.23	9/18/2023 10:10:42 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$284.54	9/18/2023 10:10:42 AM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,955.88	9/18/2023 10:10:43 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,404.03	9/18/2023 10:10:43 AM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$293.59	9/18/2023 10:10:43 AM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$152.82	9/18/2023 10:10:43 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$94.55	9/18/2023 10:10:29 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$173.24	9/18/2023 10:10:29 AM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$153.99	9/18/2023 10:10:30 AM
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$98.99	9/18/2023 10:10:30 AM
MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$180.54	9/18/2023 10:10:30 AM
MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$12.45	9/18/2023 10:10:30 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$79.99	9/18/2023 10:10:30 AM

MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	16.00	\$4.00	9/18/2023 10:10:30 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$6.00	9/18/2023 10:10:31 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	32.00	\$8.00	9/18/2023 10:10:31 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$17.33	9/18/2023 10:10:31 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.89	9/18/2023 10:10:31 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$8.44	9/18/2023 10:10:31 AM
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$143.39	9/18/2023 10:10:31 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$8.44	9/18/2023 10:10:32 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$10.95	9/18/2023 10:10:32 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$8.22	9/18/2023 10:10:32 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$5.11	9/18/2023 10:10:32 AM
MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$96.77	9/18/2023 10:10:32 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	12.00	\$2.33	9/18/2023 10:10:33 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$6.22	9/18/2023 10:10:33 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,138.37	9/18/2023 10:10:28 AM
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$52.28	9/18/2023 10:10:28 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$7.78	9/18/2023 10:10:28 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$9.56	9/18/2023 10:10:28 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$9.56	9/18/2023 10:10:28 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	16.00	\$19.11	9/18/2023 10:10:28 AM
MANYAR	25237700	PIN CLEVIS, 1/2X21/2 ZP	8.00	\$18.11	9/18/2023 10:10:29 AM
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$85.44	9/18/2023 10:10:29 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$213.54	9/18/2023 10:10:29 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$94.44	9/18/2023 10:10:29 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$5.44	9/18/2023 10:10:35 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.55	9/18/2023 10:10:35 AM
MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,139.15	9/18/2023 10:10:35 AM
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$14.89	9/18/2023 10:10:35 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$3.11	9/18/2023 10:10:35 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$3.11	9/18/2023 10:10:35 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.33	9/18/2023 10:10:36 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$3.11	9/18/2023 10:10:36 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.55	9/18/2023 10:10:36 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:10:36 AM

MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:10:36 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.78	9/18/2023 10:10:36 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.55	9/18/2023 10:10:36 AM
MANYAR	20934000	BRAKE SHOE, 1023124-000	8.00	\$259.76	9/18/2023 10:10:37 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	4.00	\$0.78	9/18/2023 10:10:37 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.55	9/18/2023 10:10:37 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.55	9/18/2023 10:10:37 AM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$12.45	9/18/2023 10:10:37 AM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$3.05	9/18/2023 10:10:37 AM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 2:28:41 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 2:28:42 PM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 2:28:42 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	4.00	\$698.02	10/24/2023 2:28:42 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 2:28:42 PM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	24.00	\$4.17	10/24/2023 2:28:42 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 2:28:43 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 2:28:43 PM
MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 2:28:43 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 2:28:43 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 2:28:43 PM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.55	9/18/2023 10:10:33 AM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.89	9/18/2023 10:10:33 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.45	9/18/2023 10:10:33 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$874.39	9/18/2023 10:10:33 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$1.08	9/18/2023 10:10:34 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$8.56	9/18/2023 10:10:34 AM
MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$5.44	9/18/2023 10:10:34 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.55	9/18/2023 10:10:34 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$1.00	9/18/2023 10:10:34 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.55	9/18/2023 10:10:34 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$13.00	9/18/2023 10:10:34 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$3.11	9/18/2023 10:10:35 AM
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	50.00	\$298.53	11/2/2023 8:18:21 AM
MANYAR	01A012	DRILL BIT, 3/16 SST JOBBER	2.00	\$9.66	11/15/2023 9:44:49 AM

MANYAR	3H504	RUSH, SAUCER CUP	2.00	\$84.17	11/20/2023 5:19:50 PM
Total				\$52,087.16	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	11/9/2023 8:11:41 AM	03-320	REPAIR REPL UNDERCARRIAGE	\$397.60	11/9/2023 8:11:41 AM
Total				\$397.60	

**WO # 226136**

**Open Date** 6/12/2023 3:41:20 PM  
**Complete Date** 11/30/2023 12:36:17 PM  
**Close Date**

**Labor** \$12,378.82  
**Parts** \$47,164.44  
**Fluid** \$0.00  
**Commercial** \$156.80  
**Total** \$59,700.06

**Unit Number A7910**

Job Notes		
Job	Change Time	Note
FABRICATE MISC BRACKETS	9/28/2023 11:12:28 AM	Fabricated air hose tie down brackets , welded brackets in requested spots, cleaned and painted weld zones and various rust touch ups....689
INSTALL FRAME ASSEMBLY	10/29/2023 5:27:16 PM	Installed rebuilt bogie assemblies and installed clamp/guides with locktite .....591 Secured some air lines hanging down .....591 Checked for air leaks with shop air 110psi and no leaks.....591 Applied brakes and checked operation and all brakes are working and releasing .....591 Greased pivots .....591 Removed some graffiti off one of the seats.....591
OVERHAUL ASSEMBLY/DISASSEMBLY	9/27/2023 7:25:12 PM	disassembled bogies and sent frames for sandblasting
OVERHAUL ASSEMBLY/DISASSEMBLY	9/28/2023 8:54:14 PM	disassembled and cleaned axles
OVERHAUL ASSEMBLY/DISASSEMBLY	10/30/2023 9:13:10 PM	rebuilt bogies
REPAIR REPL AIR LINE	10/6/2023 2:35:16 PM	-replaced air lines, wrapped air lines in protecting wrap, tied air lines up out of the way, plugged off bogie air lines and tested for leaks...1042/1074
REPAIR REPL FRAME BOLTS	11/28/2023 9:27:17 AM	replace bolts on chairs and install acorn nuts both sides of chairs, as per inspection .....518, 1042
REPAIR REPL HOOK TOW	11/28/2023 9:25:15 AM	replace tow bars
REPAIR REPL HOOK TOW	11/30/2023 12:34:50 PM	new tow bar with new hardware done.....1042,518,1075
REPAIR REPL SYSTEM	6/12/2023 3:41:39 PM	"repairs from the conditional assessment completed by the consulting firm hedgehog" HHT Report#: 23-003-R002 Version 1.1.
TRANSPORT COMPLETE UNIT	10/26/2023 9:48:05 AM	SEA TO SKY TRANSFER - MANHEQ TO STANLEY PARK

Labor						
Employee	Start Time	Job Code	Job	Labor Hours	Labor Cost	Change Time
s.22(1)	9/21/2023 7:22:44 AM	03-051-LS0	REPAIR REPL AIR LINE	1.91	\$261.67	9/21/2023 9:17:21 AM
	9/22/2023 8:38:28 AM	03-051-LS0	REPAIR REPL AIR LINE	1.67	\$228.22	9/22/2023 10:18:28 AM
	9/22/2023 12:52:08 PM	03-051-LS0	REPAIR REPL AIR LINE	1.90	\$259.92	9/22/2023 2:45:59 PM
	9/25/2023 7:32:07 AM	03-051-LS0	REPAIR REPL AIR LINE	1.69	\$232.10	9/25/2023 9:13:49 AM

s.22(1)	9/25/2023 8:33:20 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.94	\$539.10	9/26/2023 12:29:28 AM
	9/26/2023 7:34:47 AM	03-051-LS0	REPAIR REPL AIR LINE	4.50	\$616.50	9/26/2023 12:04:48 PM
	9/26/2023 8:33:00 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.79	\$518.66	9/27/2023 12:20:10 AM
	9/27/2023 7:24:18 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	0.61	\$83.11	9/27/2023 8:00:48 PM
	9/27/2023 8:30:28 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.85	\$527.07	9/28/2023 12:21:42 AM
	9/27/2023 8:33:28 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.80	\$520.22	9/28/2023 12:21:19 AM
	9/27/2023 8:33:28 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.80)	(\$520.22)	9/28/2023 12:21:42 AM
	9/28/2023 7:09:34 AM	21-010-B49	FABRICATE MISC BRACKETS	4.01	\$550.02	9/28/2023 11:12:47 AM
	9/28/2023 11:12:58 AM	21-010-B49	FABRICATE MISC BRACKETS	0.29	\$39.05	9/28/2023 11:30:04 AM
	9/28/2023 12:03:50 PM	21-010-B49	FABRICATE MISC BRACKETS	0.43	\$58.68	9/28/2023 12:29:37 PM
	9/28/2023 4:08:03 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.90	\$533.81	9/28/2023 8:01:51 PM
	9/29/2023 7:52:49 AM	12-008-A00	REFINISH ASSEMBLY	3.56	\$560.70	9/29/2023 11:26:25 AM
	9/29/2023 12:01:21 PM	12-008-A00	REFINISH ASSEMBLY	2.92	\$459.90	9/29/2023 2:56:33 PM
	10/3/2023 6:26:37 AM	12-008-A00	REFINISH ASSEMBLY	1.48	\$232.31	10/3/2023 7:55:08 AM
	10/3/2023 6:26:37 AM	12-008-A00	REFINISH ASSEMBLY	(1.48)	(\$232.31)	10/3/2023 12:12:05 PM
	10/3/2023 6:30:00 AM	12-008-A00	REFINISH ASSEMBLY	1.42	\$223.43	10/3/2023 12:12:04 PM
	10/3/2023 6:31:56 AM	21-010-B49	FABRICATE MISC BRACKETS	0.01	\$1.03	10/3/2023 6:32:24 AM
	10/3/2023 12:06:27 PM	21-010-B49	FABRICATE MISC BRACKETS	0.01	\$0.91	10/3/2023 12:06:53 PM
	10/4/2023 6:30:00 AM	21-010-B49	FABRICATE MISC BRACKETS	0.04	\$5.37	10/5/2023 6:37:42 AM
	10/4/2023 6:32:00 AM	21-010-B49	FABRICATE MISC BRACKETS	0.01	\$0.80	10/4/2023 6:32:24 AM
	10/4/2023 6:32:00 AM	21-010-B49	FABRICATE MISC BRACKETS	(0.01)	(\$0.80)	10/5/2023 6:37:43 AM
	10/20/2023 8:37:31 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.68	\$504.16	10/21/2023 12:18:20 AM
	10/23/2023 8:30:51 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.67	\$502.68	10/24/2023 12:11:40 AM
	10/23/2023 8:34:51 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.60	\$493.54	10/24/2023 12:11:03 AM
	10/23/2023 8:34:51 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.60)	(\$493.54)	10/24/2023 12:11:40 AM
	10/24/2023 8:30:35 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.88	\$531.71	10/25/2023 12:24:03 AM
	10/24/2023 8:34:35 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.81	\$522.58	10/25/2023 12:23:29 AM
	10/24/2023 8:34:35 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.81)	(\$522.58)	10/25/2023 12:24:03 AM
	10/25/2023 3:59:33 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	5.07	\$694.51	10/25/2023 9:03:43 PM
	10/25/2023 8:30:08 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.73	\$511.16	10/26/2023 12:16:28 AM
	10/25/2023 9:04:08 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.16	\$433.53	10/26/2023 12:14:00 AM
	10/25/2023 9:04:08 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.16)	(\$433.53)	10/26/2023 12:16:29 AM
	10/26/2023 6:29:53 AM	21-010-B49	FABRICATE MISC BRACKETS	0.84	\$114.85	10/26/2023 7:20:12 AM
	10/26/2023 8:30:00 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.85	\$526.92	10/27/2023 12:21:48 AM

s.22(1)	10/26/2023 8:48:00 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	3.55	\$485.82	10/27/2023 12:20:48 AM
	10/26/2023 8:48:00 PM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	(3.55)	(\$485.82)	10/27/2023 12:21:49 AM
	10/28/2023 7:36:07 AM	08-MCH-010	OVERHAUL ASSEMBLY/DISASSEMBLY	10.44	\$1,430.81	10/28/2023 6:02:46 PM
	10/29/2023 8:08:10 AM	14-014-FR3	INSTALL FRAME ASSEMBLY	9.34	\$1,279.01	10/29/2023 5:28:20 PM
	10/29/2023 8:08:10 AM	14-014-FR3	INSTALL FRAME ASSEMBLY	(9.34)	(\$1,279.01)	10/29/2023 5:28:59 PM
	10/29/2023 1:00:00 PM	14-014-FR3	INSTALL FRAME ASSEMBLY	5.00	\$685.00	10/29/2023 5:28:59 PM
	11/3/2023 12:03:54 PM	21-010-B49	FABRICATE MISC BRACKETS	2.96	\$405.44	11/3/2023 3:01:29 PM
	11/7/2023 12:02:18 PM	21-010-B49	FABRICATE MISC BRACKETS	0.77	\$105.60	11/7/2023 12:48:33 PM
	11/28/2023 2:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	0.93	\$127.87	11/28/2023 2:46:00 PM
	11/28/2023 2:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	0.93	\$127.87	11/28/2023 2:57:49 PM
	11/28/2023 2:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	0.93	\$127.87	11/28/2023 2:46:28 PM
	11/28/2023 2:04:00 PM	03-077-N90	REPAIR REPL FRAME BOLTS	(0.93)	(\$127.87)	11/28/2023 2:57:49 PM
	11/29/2023 9:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:16:49 AM
	11/29/2023 9:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:16:49 AM
	11/29/2023 9:30:00 AM	03-014-HM0	REPAIR REPL HOOK TOW	1.00	\$137.00	11/29/2023 11:16:49 AM
TOTAL			89.17	\$12,378.82		

Materials						
Location	Part No	Description	Qty	Part Cost	Change Time	
MANYAR	48-6C	CONNECTOR, 3/8T X 3/8 MPT	25.00	\$47.43	9/23/2023 2:29:22 PM	
MANYAR	2087067	SEALANT, PIPE THREAD 50 ML	1.00	\$34.78	9/25/2023 8:12:32 AM	
MANYAR	S778	COUPLING, MALE AIR 1/4 NPT FEM	4.00	\$21.79	9/26/2023 11:07:41 AM	
MANYAR	48-6B	CONNECTOR, 3/8TUBE OD X 1/4MPT	2.00	\$3.45	9/26/2023 11:07:41 AM	
MANYAR	801-6	HOSE, MULTI-PURPOSE SHOP 3/8"	50.00	\$298.53	9/22/2023 10:13:40 AM	
MANYAR	110-CB	BUSHING, 3/8"NPT X 1/4 "FPT	2.00	\$3.42	9/21/2023 7:53:50 AM	
MANYAR	775BK	COUPLING, AIR FEMALE 1/4 FNPT	2.00	\$20.92	9/21/2023 7:53:51 AM	
MANYAR	112-B	NIPPLE, CLOSE 1/4" NPT	2.00	\$2.62	9/21/2023 7:53:51 AM	
MANYAR	83-6019C	TIE STRAP, NYLON 8"	1.00	\$10.44	9/22/2023 2:02:48 PM	
MANYAR	20934000	BRAKE SHOE, 1023124-000	16.00	\$463.86	9/19/2023 6:58:28 AM	
MANYAR	25237700	PIN CLEVIS, 1/2X21/2 ZP	8.00	\$16.17	9/19/2023 6:58:28 AM	
MANYAR	26193700	ROLLER BOLSTER, 2'OD .75 ID	4.00	\$76.28	9/19/2023 6:58:28 AM	
MANYAR	20508200	BEARING CONE, 1.5000 ID	1.00	\$128.03	9/19/2023 6:58:29 AM	
MANYAR	20505400	BEARING CUP, 2.7170 OD	1.00	\$46.67	9/19/2023 6:58:29 AM	
MANYAR	27208100	SPRING COMPR, .25X1.5ODX 4"FL	3.00	\$119.34	9/19/2023 6:58:29 AM	

MANYAR	20519100	BEARINGG CONE, 1.2500ID W/SEAL	8.00	\$1,017.10	9/19/2023 6:58:29 AM
MANYAR	20505900	BEARING CUP, 2.3280 OD	8.00	\$137.49	9/19/2023 6:58:30 AM
MANYAR	26451700	SEAL, 1.375SHX2.437BX.375W	8.00	\$190.66	9/19/2023 6:58:30 AM
MANYAR	20508300	BEARING CONE, 1.1250 ID	16.00	\$780.70	9/19/2023 6:58:30 AM
MANYAR	1023015-001	BUSHING-ROLLER	4.00	\$135.71	10/24/2023 2:02:45 PM
MANYAR	1023021-001	SPRING	32.00	\$4,414.80	10/24/2023 2:02:45 PM
MANYAR	1023112-001	BOLT-B/CY BRKT	8.00	\$483.10	10/24/2023 2:02:45 PM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	3.00	\$523.52	10/24/2023 2:02:46 PM
MANYAR	20624900	BLOCK, V/PCKG 1.188SH X 1.5B X	8.00	\$272.60	10/24/2023 2:02:46 PM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	23.00	\$3.99	10/24/2023 2:02:46 PM
MANYAR	1023034-001	HANGER, WELDMENT	4.00	\$3,136.06	10/24/2023 2:02:46 PM
MANYAR	1023024-001	HANGER, SAFETY BOLSTER BOLSTER	4.00	\$298.99	10/24/2023 2:02:47 PM
MANYAR	1023031-001	CAP, JOURNAL BOX	8.00	\$5,666.40	10/24/2023 2:02:47 PM
MANYAR	1023032-001	JOURNAL BOX	8.00	\$4,030.79	10/24/2023 2:02:47 PM
MANYAR	1023101-002	PISTON & ROD ASSY.	8.00	\$788.34	10/24/2023 2:02:47 PM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	16.00	\$3.57	9/19/2023 7:14:24 AM
MANYAR	60749200	HHCS, 5/16-18X3/4 GR5 Z/P	24.00	\$5.36	9/19/2023 7:14:24 AM
MANYAR	60701200	HHCS, 1/4-20X2 GR5 Z/P	32.00	\$71.42	9/19/2023 7:14:24 AM
MANYAR	68533200	WASHER, FLAT 7/8 L/P	8.00	\$13.29	9/19/2023 7:26:59 AM
MANYAR	64782600	LOCKNUT, N/I 1/2-20 Z/P	8.00	\$7.64	9/19/2023 7:27:00 AM
MANYAR	65163900	PIN COTTER, 1/8X2 ZP	8.00	\$1.39	9/19/2023 7:27:00 AM
MANYAR	65163000	PIN COTTER, 1/8X1 ZP	8.00	\$0.89	9/19/2023 7:27:00 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	32.00	\$2.78	9/19/2023 7:27:00 AM
MANYAR	68530000	WASHER, FLAT, 1/4, ZINC PLATED	56.00	\$4.86	9/19/2023 7:27:00 AM
MANYAR	68530800	WASHER FLAT, 3/8 Z/P	8.00	\$1.39	9/19/2023 7:27:01 AM
MANYAR	65171900	PIN, DOWEL 5/16X3/4	8.00	\$11.61	9/19/2023 7:27:01 AM
MANYAR	65162700	PIN COTTER, 1/8X3/4 ZP	16.00	\$1.39	9/19/2023 7:27:01 AM
MANYAR	65161500	PIN COTTER, 3/32X3/4 ZP	56.00	\$4.86	9/19/2023 7:27:01 AM
MANYAR	60766400	HHCS, 3/8-16X3/4 GR5	8.00	\$3.47	9/19/2023 7:15:49 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	16.00	\$7.54	9/19/2023 7:15:49 AM
MANYAR	60766600	HHCS, 3/8-16X1 GR5 Z/P	8.00	\$3.77	9/19/2023 7:15:49 AM
MANYAR	60749800	HHCS, 5/16-18X1 1/2 GR5 Z/P	32.00	\$15.48	9/19/2023 7:15:49 AM
MANYAR	60766800	HHCS, 3/8-16X1 1/4 GR5 Z/P	8.00	\$2.78	9/19/2023 7:15:50 AM
MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/19/2023 7:37:02 AM



MANYAR	68537000	WASHER LOCK 1/4 MED SPRING Z/P	32.00	\$2.78	9/19/2023 7:37:02 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	24.00	\$2.08	9/19/2023 7:37:03 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	32.00	\$2.78	9/19/2023 7:37:03 AM
MANYAR	68537200	WASHER LOCK, 5/16 MED SPRING	16.00	\$1.39	9/19/2023 7:37:03 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/19/2023 7:37:03 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/19/2023 7:37:03 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	8.00	\$0.69	9/19/2023 7:37:04 AM
MANYAR	24151700	LINK, BRAKE CYL LH Z/P	4.00	\$89.13	9/19/2023 8:05:09 AM
MANYAR	1023028-001	PLATE, WEAR-BR/ROLLER	4.00	\$154.36	9/19/2023 7:52:09 AM
MANYAR	1023104-001	BRAKE, SHACKLE	16.00	\$252.56	9/19/2023 7:52:09 AM
MANYAR	1023100-001	CYLINDER-BRAKE ASSY	8.00	\$4,828.86	9/19/2023 7:52:10 AM
MANYAR	1023029-001	SUPPORT-BAR, J-B	8.00	\$480.82	9/19/2023 7:52:10 AM
MANYAR	1023030-001	PLATE-WEAR, JOURNAL BOX	16.00	\$702.53	9/19/2023 7:52:10 AM
MANYAR	1023105-001	CYLINDER, BRAKE	8.00	\$1,338.41	9/19/2023 7:52:10 AM
MANYAR	1023103-001	CAP, BRAKE CYL	8.00	\$521.79	9/19/2023 7:52:11 AM
MANYAR	1023113-001	LEVER, CYLINDER BRAKE	8.00	\$1,033.47	9/19/2023 7:57:20 AM
MANYAR	1023115-001	LEVER, OUTSIDE-BRAKE	5.00	\$859.75	9/19/2023 7:57:20 AM
MANYAR	1023119-001	ADJUSTER BODY	8.00	\$1,746.32	9/19/2023 7:57:20 AM
MANYAR	20514600	BEARING, SPHERICAL	1.00	\$136.45	9/19/2023 7:57:21 AM
MANYAR	1023420-001	SPACER, JOUR/BOX FREE	4.00	\$262.14	9/19/2023 7:57:21 AM
MANYAR	1023117-001	BRACKET, BRK-CYL	4.00	\$610.82	9/19/2023 7:57:21 AM
MANYAR	1023117-002	BRACKET, BRK-CYL	4.00	\$643.96	9/19/2023 7:57:21 AM
MANYAR	1023114-001	BOLT, INS-HNGR	8.00	\$494.71	9/19/2023 7:57:22 AM
MANYAR	1023118-001	SPACER-BRAKE, INSIDE ZINC	8.00	\$254.05	9/19/2023 7:57:22 AM
MANYAR	1023120-001	PIN, BR LVR	8.00	\$1,253.59	9/19/2023 7:57:22 AM
MANYAR	1023116-001	SPACER, OUTSIDE BR	8.00	\$200.88	9/19/2023 7:57:22 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,016.40	9/19/2023 7:41:22 AM
MANYAR	27207500	SPRING COMPR, .312X2ODX 4.5FL	7.00	\$154.68	9/19/2023 6:58:31 AM
MANYAR	25235000	PIN CLEVIS, 3/8X1 3/8 ZP	16.00	\$16.07	9/19/2023 6:58:31 AM
MANYAR	24151600	LINK, BRAKE CYL RH Z/P	4.00	\$3.82	9/19/2023 6:58:31 AM
MANYAR	25234400	PIN CLEVIS, 1/4X1 7/8 ZP	8.00	\$6.94	9/19/2023 6:58:32 AM
MANYAR	25234300	PIN CLEVIS, 1/4X1 3/8 ZP	8.00	\$7.14	9/19/2023 6:58:32 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/19/2023 6:58:32 AM
MANYAR	25234500	PIN CLEVIS, 1/4X2 1/2 ZP	8.00	\$8.53	9/19/2023 6:58:32 AM

MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/19/2023 6:58:33 AM
MANYAR	60700600	HHCS, 1/4-20X1 1/4 GR5 Z/P	32.00	\$11.11	9/19/2023 7:11:30 AM
MANYAR	64746800	NUT, CASTLE 7/8-14 GR5 Z/P	8.00	\$86.40	9/19/2023 7:23:51 AM
MANYAR	64761400	NUT, HEX 1/2-20 JAM GR5 Z/P	1.00	\$0.97	9/19/2023 7:23:52 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	12.00	\$2.08	9/19/2023 7:23:52 AM
MANYAR	64750000	NUT HEX, 1/4-20 FULL GR5 Z/P	32.00	\$5.56	9/19/2023 7:23:52 AM
MANYAR	61089200	SHCS, 3/8-16 X 1 Z/P	8.00	\$7.34	9/19/2023 7:23:52 AM
MANYAR	60849600	HHCS, 1/2-13X2 GR8 Z/P	4.00	\$9.77	9/19/2023 7:23:53 AM
MANYAR	64760600	NUT HEX, 3/8-24 JAM GR5 Z/P	8.00	\$3.08	9/19/2023 7:23:53 AM
MANYAR	28956000	YOKE END, 2 1/2" 3/8-24 THRD	8.00	\$161.20	9/19/2023 7:13:11 AM
MANYAR	64760400	NUT, HEX 3/8-16 JAM	8.00	\$0.79	9/19/2023 7:23:51 AM
MANYAR	64751800	NUT HEX, 1/2-20 FULL GR5	8.00	\$4.07	9/19/2023 7:23:53 AM
MANYAR	61192000	SHSS, 1/4-20X1/4	16.00	\$4.56	9/19/2023 7:23:53 AM
MANYAR	68537400	WASHER LOCK, 3/8 MED SPRING	16.00	\$1.39	9/19/2023 7:37:04 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	4.00	\$0.69	9/19/2023 7:41:20 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/19/2023 7:41:20 AM
MANYAR	68537800	WASHER LOCK, 1/2 MED SPRING	8.00	\$1.39	9/19/2023 7:41:20 AM
MANYAR	1022115-001	SPACER, RAD/ROD	1.00	\$42.69	9/19/2023 7:41:21 AM
MANYAR	1022113-001	WASHER, AXLE	1.00	\$117.18	9/19/2023 7:41:21 AM
MANYAR	68981000	ZERK GREASE, 1/4-28 STRAIGHT	4.00	\$2.73	9/19/2023 7:41:21 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	16.00	\$1,016.40	9/19/2023 6:58:31 AM
MANYAR	20505200	BEARING CUP, 2.3125 OD	(16.00)	(\$1,016.40)	9/19/2023 7:41:22 AM
MANYAR	68980200	ZERK GREASE, 1/8-PT STRAIGHT	8.00	\$11.11	9/19/2023 7:41:22 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/19/2023 7:42:48 AM
MANYAR	1022115-003	SPACER	1.00	\$36.64	9/19/2023 7:42:49 AM
MANYAR	1022115-002	SPACER	1.00	\$42.36	9/19/2023 7:42:49 AM
MANYAR	1023016-001	HOOK-TRUCK-FRAME	4.00	\$356.82	9/19/2023 7:44:39 AM
MANYAR	1023026-001	SPRING, -T BAR	8.00	\$1,060.55	9/19/2023 7:44:39 AM
MANYAR	1022115-004	SPACER, RAD/ROD	1.00	\$58.58	9/19/2023 7:44:39 AM
MANYAR	1023027-001	BAR, L-SPRING	8.00	\$313.87	9/19/2023 7:44:40 AM
MANYAR	1023025-001	SHIM, BOLSTER WEAR	8.00	\$470.90	9/19/2023 7:44:40 AM
MANYAR	1023106-001	SCREW-ADJUST	8.00	\$960.45	9/19/2023 7:53:50 AM
MANYAR	27189300	SPRING COMPR, BRAKE CYL. .72X.	8.00	\$84.32	9/19/2023 6:58:33 AM
MANYAR	1023108-001	STRAP-BR LINK	16.00	\$689.24	9/19/2023 7:53:51 AM

MANYAR	1023110-001	PLATE-ATTACH CYL	8.00	\$399.88	9/19/2023 7:53:51 AM
MANYAR	1023109-002	LEVER, RH INSIDE	4.00	\$810.61	9/19/2023 7:53:51 AM
MANYAR	1023109-001	LEVER, LH INSIDE	4.00	\$810.61	9/19/2023 7:53:51 AM
MANYAR	26338	TAPE, MASKING 1-1/2"	1.00	\$13.69	10/29/2023 3:48:19 PM
MANYAR	135354	THREADLOCKER, MED STR BLUE	1.00	\$21.40	10/29/2023 2:14:46 PM
Total				\$47,164.44	

Commercial					
Vendor	Entry Time	Job Code	Job	Commercial Cost	Change Time
O.S. Airstrip Ltd.	10/25/2023 12:54:20 PM	03-320-000	REPAIR REPL SYSTEM	\$156.80	10/25/2023 12:54:20 PM
Total				\$156.80	

From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>

To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>

Date: 11/8/2023 4:01:45 PM

Subject: Accepted: Final inspection SPT @ Mon Nov 27, 2023 9:30am - 1:30pm (PST) (Derek Puzzuoli)

Attachments: invite.ics

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**Derek Puzzuoli has accepted this invitation.**

Hi everyone,

Reserving this time in your calendars for the final inspection on Nov. 27.  
Time is still to be confirmed with Dave.

Thanks,  
Rosemary

#### When

Monday Nov 27, 2023 \u2013 9:30am – 1:30pm (Pacific Time - Vancouver)

#### Location

SP Train

[View map \[google.com\]](#)

#### Guests

rosemary.yip@vancouver.ca - organizer

Derek Puzzuoli - creator

dave.lywak@technicalsaftybc.ca

Trevor Gauthier

Neale, Brian

Moyls, Krista

Shergill, Mandeep - optional

[View all guest info \[calendar.google.com\]](#)

Invitation from [Google Calendar \[calendar.google.com\]](#)

You are receiving this email because you are an attendee on the event. To stop receiving future updates for this event, decline this event.

Forwarding this invitation could allow any recipient to send a response to the organizer, be added to the guest list, invite others regardless of their own invitation status, or modify your RSVP. [Learn more \[support.google.com\]](#) City of Vancouver - FOI 2023-725 - Page 122 of 270

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From:

Date:

Subject:

Attachments: Final inspection SPT.ics

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**From:**  
**Subject:** Final inspection SPT  
**Location:** SP Train  
**When:** 11/27/2023 5:30:00 PM - 9:30:00 PM

---

## Final inspection SPT

Hi everyone,\n\nReserving this time in your calendars for the final inspection on Nov. 27.\nTime is still to be confirmed with Dave.\n\nThanks,\nRosemary\n

**From:** "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
**To:** "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
**CC:** "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
**Date:** 11/10/2023 10:55:34 AM  
**Subject:** Carriage and Locomotive Bogies

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Report Suspicious

Hi Mandeep,

In regards to the ongoing discussion regarding the modification of carriage bogies to serve as locomotive bogies, we recognize the thought, talent, and experience that's behind the push from your side. However, we must maintain our recommendation against it until we investigate the drive bogie removed from the blue locomotive.

While we don't believe the modification will pose a considerable risk, per the ASTM F24 standards that HHT follows as ride engineers, modifications to OEM components are typically a last resort. We're not there yet, if we exhaust the possibility of using the bogie from the blue locomotive, then HHT will reconsider. Further, Parks has weighed their operational risk internally and has prioritized the remaining carriages above the red locomotive. It is still hoped that the red locomotive will enter service as soon as it can, but it's likely to miss the TSBC inspection date in our estimation (please correct me if I'm wrong).

In regards to the bogies of a differing vintage, there are multiple fitment issues on them including with the bogie-to-carriage interaction. Prioritizing these (or having one converted into a drive bogie), presents another set of unknowns that HHT and Parks are unwilling to accept while we already have enough of the overhauled bogies in process to meet the needs of the 5 carriages. Trevor is investigating this closely with Rich and intends to have a complete plan for the older bogies early next week. If that plan shows that we can accelerate the delivery on a carriage with them, we would recommend diverting Rich's effort to them at that point.

I hope this provides some transparency into our thinking. As always we're willing to be flexible as we learn more, but for now, we must focus on the overhauled bogies for reassembly to carriages.

Cheers,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: s.22(1) E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

206-2250 Boundary Road, Burnaby, BC, V5M 3Z3, Canada

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[l](#) [m](#)

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From: "Jessica Mager" <[jmager@acuren.com](mailto:jmager@acuren.com)>  
To: "Yip, Rosemary" <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
"Derek Puzzuoli" <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Date: 9/5/2023 9:59:30 AM  
Subject: [EXT] RE: [EXT] Re: [EXT] Material Identification List for Acuren  
Attachments: A23605-J085749\_01-01R0 60CIT004 LIBS-JMM-01 .pdf

---

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---

Hi Rosemary,  
Please see my report attached and get in touch with any questions.  
Best Regards,  
Jessica

Jessica Mager, P.Eng.  
FIELD ENGINEERING SERVICES MANAGER, NATIONAL BOARD INSPECTOR (IS/R)  
T 604-448-3886 C 604-329-6091

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---

From: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
Sent: Tuesday, August 29, 2023 11:32 AM  
To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Cc: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalsfafetybc.ca](mailto:Dave.Lywak@technicalsfafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: RE: [EXT] Re: [EXT] Material Identification List for Acuren

Thanks Derek!

Sergio Bevilacqua , RSE  
Acting Superintendent III  
Shops/Garage Operations  
City of Vancouver | Fleet & Manufacturing Services  
250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1  
Cel: **s.15(1)(l)** Office: 604.326.4721  
Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Tuesday, August 29, 2023 11:12 AM  
To: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
Cc: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>

---

City of Vancouver - PO 2023-125 - Page 126 of 270

<[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalsaftybc.ca](mailto:Dave.Lywak@technicalsaftybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: [EXT] Re: [EXT] Material Identification List for Acuren

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---

Hi All,

I will also be on site to meet Jessica, answer any questions, and observe the process. I have a few early morning meetings, but I'm aiming for 9-930 as well.

Cheers,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: s.22(1) E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |  
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On Tue, Aug 29, 2023 at 10:19\u8239 AM Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)> wrote:

No problem Jessica! Tim and Hardeep will be here to greet you and show you where everything is including a power outlet.

Thanks

Sergio Bevilacqua , RSE  
Acting Superintendent III  
Shops/Garage Operations  
City of Vancouver | Fleet & Manufacturing Services  
250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1  
Cel s.15(1)(l) Office: 604.326.4721  
Email:[Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



---

From: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Sent: Monday, August 28, 2023 8:11 AM

To: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalsaftybc.ca](mailto:Dave.Lywak@technicalsaftybc.ca)>; Grimann, Carla

<[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: [EXT] RE: [EXT] Material Identification List for Acuren

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Thanks Rosemary and Sergio,

I will plan to attend your shop and contact Tim or Hardeep around 9am Wednesday. I will bring all the required PPE. I will just need a power outlet.

Best Regards,

Jessica

**I received and accept the**

**WOA** [\[telemetry.eclipsescientific.acuren.com\]](https://telemetry.eclipsescientific.acuren.com)

Please click to accept or reply to the email with scope changes. Print, sign and return WOA if you are not comfortable clicking.

Jessica Mager, P.Eng.

FIELD ENGINEERING SERVICES MANAGER, NATIONAL BOARD INSPECTOR (IS/R)

T 604-448-3886 C 604-329-6091

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From: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

Sent: Friday, August 25, 2023 9:40 AM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: RE: [EXT] Material Identification List for Acuren

Thanks for the email Rosemary!

Jessica we are located at 250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1 . We are at the Fleet @ Manufacturing Services Building. I will be away but Tim Olderskog s.15(1)(l) and Hardeep Jawanda s.15(1)(l) re your contacts. They will assist you to the area where all the components you will need. We do require safety steel toe boots also a safety vest and safety glasses. If you don't have these we can provide you with them. Let us know if you need any other information.

Thanks

Sergio Bevilacqua , RSE

Acting Superintendent III

Shops/Garage Operations

City of Vancouver | Fleet & Manufacturing Services

250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1

Cel s.15(1)(l) Office: 604.326.4721

Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Friday, August 25, 2023 9:15 AM  
To: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>  
Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: RE: [EXT] Material Identification List for Acuren

Hi Jessica,

Thanks for sending the estimate. Acuren is an active vendor in our accounting system, so I won't need anything else to proceed with ordering the work.

This group will be meeting onsite at 10 am, but I imagine you'll need to start earlier. If you can let us know when you'd be onsite, the team can have the parts ready.

@Sergio, can you please provide Jessica with directions to the garage and anything else she needs to know.

Thanks again and we'll see you next week, Jessica. If you have any questions, please let me know.

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465  
Cell: s.15(1)(l)  
Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x'm k'y'm (Musqueam), s'wxwú7mesh (Squamish) and s' lilw'ta (Tsleil-Waututh)*

---

From: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>  
Sent: Friday, August 25, 2023 8:31 AM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: [EXT] RE: [EXT] Material Identification List for Acuren

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Hello Rosemary,

It was great speaking with you yesterday and thank you for the parts list. Please see my estimate attached based on most of a day at site and reporting, equipment and mileage charges. I will bring a LIBS for carbon content in steel materials and XRF for any other types of metals and welds. I always bring a hardness tester as well as it helps distinguish different cast irons and any surface hardening or heat treatment condition.

It looks like this yard is right by the Vancouver transfer station?

Best Regards,

Jessica

Jessica Mager, P.Eng.

FIELD ENGINEERING SERVICES MANAGER, NATIONAL BOARD INSPECTOR (IS/R)

T 604-448-3886 C 604-329-6091

12271 Horseshoe Way, Richmond, BC, V7A 4V4, Canada

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---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Sent: Thursday, August 24, 2023 8:27 PM

To: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: FW: [EXT] Material Identification List for Acuren

**[External]** This message comes from an external organization. Be careful of embedded links.

Hi Jessica,

Thanks for taking my call earlier today.

Here is the list of parts we'd like to have tested.

I think we would leave the determination of what tests would be required up to you, as you will have a better idea once you get eyes on the parts.

@Derek, please feel free to weigh in on this point.

We will be meeting at the garage at the Manitoba Yard complex on Wednesday 30<sup>th</sup> at 10 am. Please let me know how much time you will need and then we can schedule an appropriate start time, and provide directions if this is your first visit to MY.

Can you also please send a cost estimate as we had discussed?

Thanks very much.

Rosemary Yip

Train Operations Team Lead

Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x̱m̱ ḵ y̱ m̱ (Musqueam), s̱ w̱x̱w̱ú̱7mesh (Squamish) and s̱ lilw̱ ta̱ (Tsleil-Waututh)*

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Thursday, August 24, 2023 7:06 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>

Subject: [EXT] Material Identification List for Acuren

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---

Hi Rosemary,

Please find the list of materials we'd like Acuren to help identify in preparation for their visit to MY next week. The general approach is to identify the materials on all components we can access at MY. This will assist us in signing off on the bogies and re-assessing the carriage frames in light of the new information about their re-fabrication.

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.*

*Hedgehog Technologies Inc.*

P: s.22(1) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]

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# LIBS POSITIVE MATERIAL IDENTIFICATION

CLIENT: CITY OF VANCOUVER PARKS BOARD  
 955 EVANS AVENUE  
 VANCOUVER, BC  
 V6A 4C8

PAGE: 1 of 14

DATE: August 30, 2023

ACUREN JOB #: 605-J085749

REPORT #: OES-JMM-01

CONTRACT/PO: email

WO: Hedgehog List

WORK LOCATION: On site - Manitoba Works Yard

ATTENTION: **ROSEMARY YIP**

PROJECT: Stanley Park Miniature Train

ITEM(S) EXAMINED: Various components as marked and listed

PART #: N/A

MATERIAL: Carbon steel

SCOPE: Stanley Park Miniature Train

## TEST DETAILS:

ACCEPTANCE STANDARD: Client's Information

REV. DATE: N/A

PROCEDURE/TECHNIQUE: INT-PMI-10P001 R01 PMI by LIBS Laser Induced Breakdown Spectroscopy Portable Analyzer

REV. #: 01

INSTRUMENT MAKE: SciAps

MODEL: Z200 +C

S/N: 0245

CAL DUE DATE: Feb 6, 2024

Type:  Spark  Spark (UV)  LIBS

ACUREN MARKING:  Low Stress Stamp  Ink  None

## CHECK STANDARDS AND SPECIFICATIONS:

CHECK STANDARD IDENTIFICATION	VALUES (wt. %)	C	Mn	Si	Cu	Ni	Cr	Mo	V	Nb	B	Fe		Accept Yes (✓) No (x)
AISI 1018 – IARM 28K	CERTIFIED	0.174	0.80	0.291	0.171	0.064	0.107	0.021	0.001	0.002	--	Bal.		
	MEASURED	0.15	0.87	0.23	0.12	0.06	0.08	0.05	0.00	< LOD	--	Bal.		✓
SPECIFICATION/MATERIAL: CARBON STEEL AISI 1018	MIN	0.14	0.60	0.10	--	--	--	--	--	--	--			
	MAX	0.20	0.90	0.25	--	--	--	--	--	--	--	Bal.		
SPECIFICATION/MATERIAL: GREY CAST IRON - TYPICAL	MIN	2.5	0.2	1.0	--	--	--	--	--	--	--			
	MAX	4.0	1.0	3.0	--	--	--	--	--	--	--	Bal.		

**RESULTS: (VALUES ARE IN WT.%)** 'Accept' means the instrument indicated material matches the specified material within the limits of the instrument. Use N/A when not applicable.

DESCRIPTION	INDICATED MATERIAL	C	Mn	Si	Cu	Ni	Cr	Mo	V	Nb	B	Fe	HB	Accept Yes (✓) No (x)
<b>Locomotive A7737-Red-Chassis</b>														
Rear plate	Carbon steel	0.10	0.44	< LOD	0.14	0.36	0.08	0.10	0.03	0.07	--	Bal.	--	N/A
Side plate	Carbon steel	0.12	0.26	< LOD	< LOD	0.29	0.02	0.07	0.03	0.08	--	Bal.	--	N/A
Front beam	Carbon steel	0.23	0.93	0.23	0.15	0.35	0.10	0.07	0.03	0.07	--	Bal.	--	N/A
Front strut	Carbon steel	0.15	0.93	0.24	0.28	0.38	0.11	0.11	0.03	0.07	--	Bal.	--	N/A
<b>Bogie-Front</b>														
Inner	Grey Cast Iron	4.86	0.88	1.95	0.19	0.38	0.10	0.08	0.05	0.03	--	Bal.	170	N/A
Outer	Grey Cast Iron	1.18	1.12	3.09	0.14	0.30	0.10	0.05	0.04	0.05	--	Bal.	215	N/A
Bogie-Front-Leaf spring hanger pin joint	Grey Cast Iron	5.59	0.74	2.69	0.13	0.30	0.08	0.05	0.04	0.05	--	Bal.	170-190	N/A
<b>Bogie-Rear</b>														
Inner	Grey Cast Iron	7.33	0.84	2.31	0.18	0.31	0.09	0.04	0.04	0.05	--	Bal.	180	N/A

Client acknowledges receipt and custody of the report or other work ("Deliverable"). Client agrees that it is responsible for assuring that acceptance standards, specifications and criteria in the Deliverable and Statement of Work ("SOW") are correct. Client acknowledges that Acuren is providing the Deliverable according to the SOW, and not any other standards. Client acknowledges that it is responsible for the failure of any items inspected to meet standards, and for remediation. Client has 15 business days following the date Acuren provides the Deliverable to inspect it, identify deficiencies in writing, and provide written rejection, or else the Deliverable will be deemed accepted. The Deliverable and other services provided by Acuren are governed by a Master Services Agreement ("MSA"). If the parties have not entered into an MSA, then the Deliverable and services are governed by the SOW and the "Acuren Standard Service Terms" ([www.acuren.com/service/terms](http://www.acuren.com/service/terms)) in effect when the services were ordered.

CLIENT REPRESENTATIVE: \_\_\_\_\_

(PRINT)

(SIGNATURE)

Jessica Mager P Eng

(PRINT)

(SIGNATURE)

REVIEWER: \_\_\_\_\_

Olivier Joos, Ph.D, P.Eng

DT No.: N/A





**CITY OF VANCOUVER PARKS BOARD**  
 Stanley Park Miniature Train

SPECIFICATION/MATERIAL: CARBON STEEL AISI 1018	MIN	0.14	0.60	0.10	--	--	--	--	--	--	--	Bal.	
	MAX	0.20	0.90	0.25	--	--	--	--	--	--	--	Bal.	
SPECIFICATION/MATERIAL: GREY CAST IRON - TYPICAL	MIN	2.5	0.2	1.0	--	--	--	--	--	--	--	Bal.	
	MAX	4.0	1.0	3.0	--	--	--	--	--	--	--	Bal.	

**RESULTS: (VALUES ARE IN WT.%)** 'Accept' means the instrument indicated material matches the specified material within the limits of the instrument. Use N/A when not applicable.

DESCRIPTION	INDICATED MATERIAL	C	Mn	Si	Cu	Ni	Cr	Mo	V	Nb	B	Fe	HB	Accept Yes (✓) No (x)
Outer	Grey Cast Iron	5.38	0.93	2.35	0.15	0.31	0.10	0.09	0.04	0.05	--	Bal.	210	N/A
Bogie-Rear-Leaf spring hanger pin joint	Grey Cast Iron	8.09	0.89	2.82	0.17	0.32	0.11	0.08	0.04	0.05	--	Bal.	190-230	N/A
<b>Locomotive A7739-Green-Chassis</b>														
Back plate	Carbon steel	0.21	0.49	< LOD	0.22	0.34	0.06	0.06	0.03	0.08	--	Bal.	--	N/A
Side plate	Carbon steel	0.09	0.76	< LOD	< LOD	0.28	0.04	0.03	0.03	0.08	--	Bal.	--	N/A
Front beam	Carbon steel	0.22	0.61	< LOD	0.18	0.33	0.06	0.06	0.03	0.07	--	Bal.	--	N/A
<b>Bogie-Front</b>														
Inner	Grey Cast Iron	4.08	0.81	2.10	0.24	0.36	0.16	0.27	0.04	0.07	--	Bal.	140	N/A
Outer	Grey Cast Iron	4.50	0.86	2.37	0.17	0.31	0.13	0.09	0.05	0.05	--	Bal.	190	N/A
<b>Bogie-Rear</b>														
Inner	Grey Cast Iron	4.62	0.94	2.65	0.23	0.35	0.13	0.19	0.04	0.06	--	Bal.	150	N/A
Outer	Grey Cast Iron	5.12	0.70	2.85	0.22	0.32	0.08	0.08	0.04	0.06	--	Bal.	210	N/A
Brake joint	Grey Cast Iron	5.68	0.80	2.88	0.20	0.31	0.10	0.08	0.05	0.06	--	Bal.	205	N/A
Weld repair*	Nickel filler	--	0.50	1.15	--	34.93	0.05	0.01	--	--	--	Bal.	--	N/A
<b>Carriage A7902 Lion's Gate-Frame</b>														
Rear plate	Carbon steel	0.10	0.79	0.08	0.24	0.35	0.10	0.07	0.03	0.07	--	Bal.	--	N/A
Side plate	Carbon steel	0.12	0.89	0.05	0.17	0.31	0.11	0.05	0.03	0.07	--	Bal.	--	N/A
Floor	Carbon steel	0.23	0.71	< LOD	< LOD	0.26	0.02	0.01	0.03	0.07	--	Bal.	--	N/A
Cross beam 1	Carbon steel	0.20	1.82	< LOD	< LOD	0.31	0.05	0.03	0.03	0.06	--	Bal.	--	N/A
Cross beam 2	Carbon steel	0.31	1.00	< LOD	0.19	0.33	0.15	0.05	0.03	0.07	--	Bal.	--	N/A
<b>Carriage A7910-Siwash Rock-Frame</b>														
Rear plate	Carbon steel	0.24	0.70	0.06	0.22	0.34	0.07	0.06	0.04	0.06	--	Bal.	--	N/A
Side plate	Carbon steel	0.13	0.75	0.05	0.22	0.33	0.08	0.06	0.04	0.06	--	Bal.	--	N/A
Floor	Carbon steel	0.12	0.23	< LOD	0.02	0.29	0.02	0.07	0.03	0.07	--	Bal.	--	N/A
Cross beam 1	Carbon steel	0.09	0.70	0.06	0.21	0.33	0.08	0.06	0.04	0.06	--	Bal.	--	N/A
Cross beam 2	Carbon steel	0.16	0.79	< LOD	< LOD	0.27	0.02	< LOD	0.03	0.06	--	Bal.	--	N/A
<b>Bogie-Front</b>														
Inner	Grey Cast Iron	3.51	1.04	2.25	0.12	0.19	0.10	0.09	0.04	0.03	--	Bal.	140	N/A
Outer	Grey Cast Iron	7.47	0.74	2.22	0.19	0.22	0.10	0.12	0.04	0.03	--	Bal.	220	N/A
Brake joint	Grey Cast Iron	7.40	1.82	2.38	0.19	0.22	0.11	0.11	0.04	0.01	--	Bal.	205	N/A
Brake joint	Grey Cast Iron	4.68	0.89	2.57	0.17	0.24	0.12	0.12	0.04	0.02	--	Bal.	--	N/A
Weld repair*	Copper filler	--	0.36	1.5	83.5	--	--	0.01	--	--	--	Bal.	--	N/A
<b>Bogie-Rear</b>														
Inner	Grey Cast Iron	4.04	0.59	2.08	0.13	0.13	0.05	< LOD	0.03	< LOD	--	Bal.	--	N/A
Outer	Grey Cast Iron	11.02	1.34	2.17	0.10	0.15	0.08	< LOD	0.03	< LOD	--	Bal.	--	N/A
Outer	Grey Cast Iron	10.46	2.09	1.58	0.17	0.20	0.11	< LOD	0.04	< LOD	--	Bal.	--	N/A

**COMMENTS:**

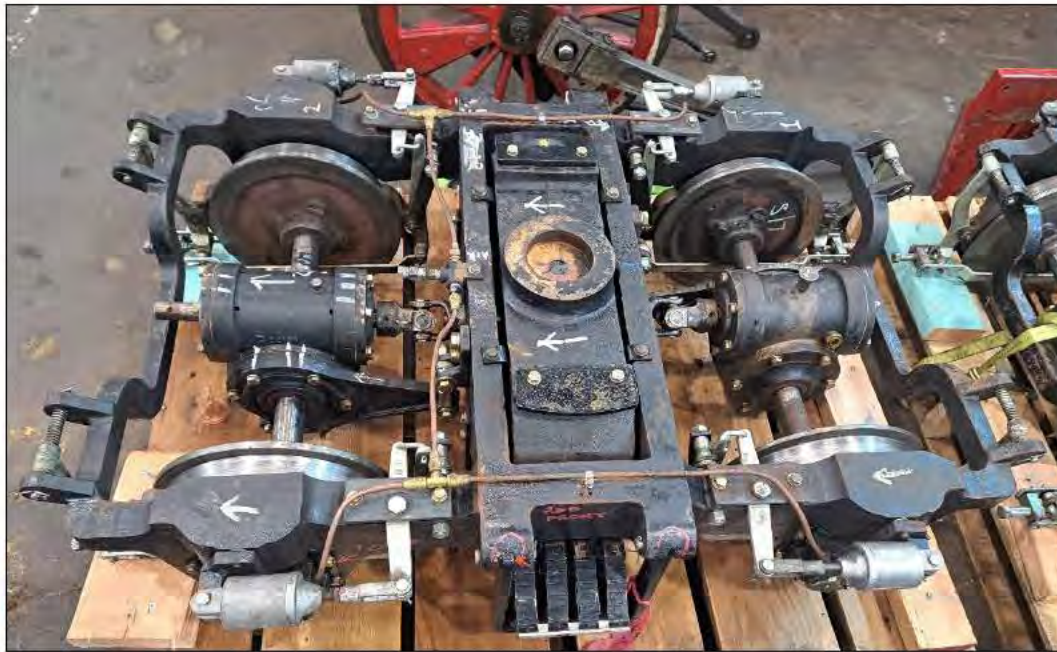
\* Welds were tested by XRF (x-ray fluorescence alloy analyser, Niton XL3t-980 SN 93851) which cannot measure carbon content.

Hardness of typical parts was tested using a Leeb portable instrument (TH170 SN 39701230).

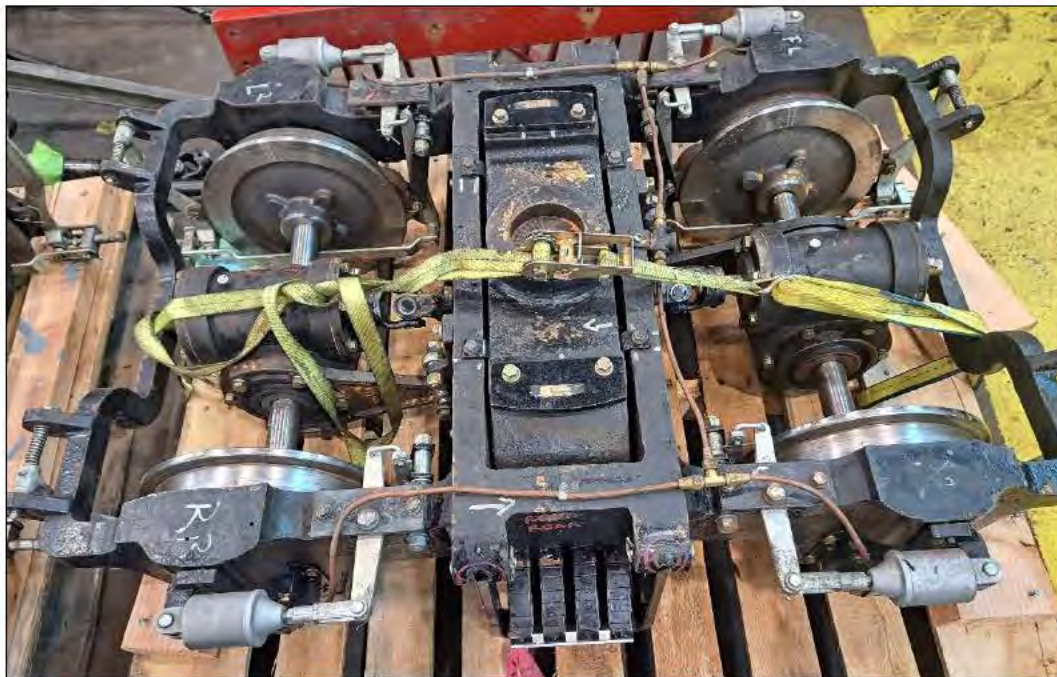
Cast irons type was determined by in-situ metallography as shown in Figures 17 to 20. The microstructure was Type A and B graphite flakes in a pearlitic matrix. The composition varies depending on whether the test occurred on a large graphite (carbon) flake or not. These cast irons are not considered weldable, but methods such as nickel electrodes with preheat and slow cooling, hot welding, studding or stitching can be attempted.



**Figure 1** Overview of components tested.



**Figure 2** Red front bogie.



**Figure 3** Red rear bogie.



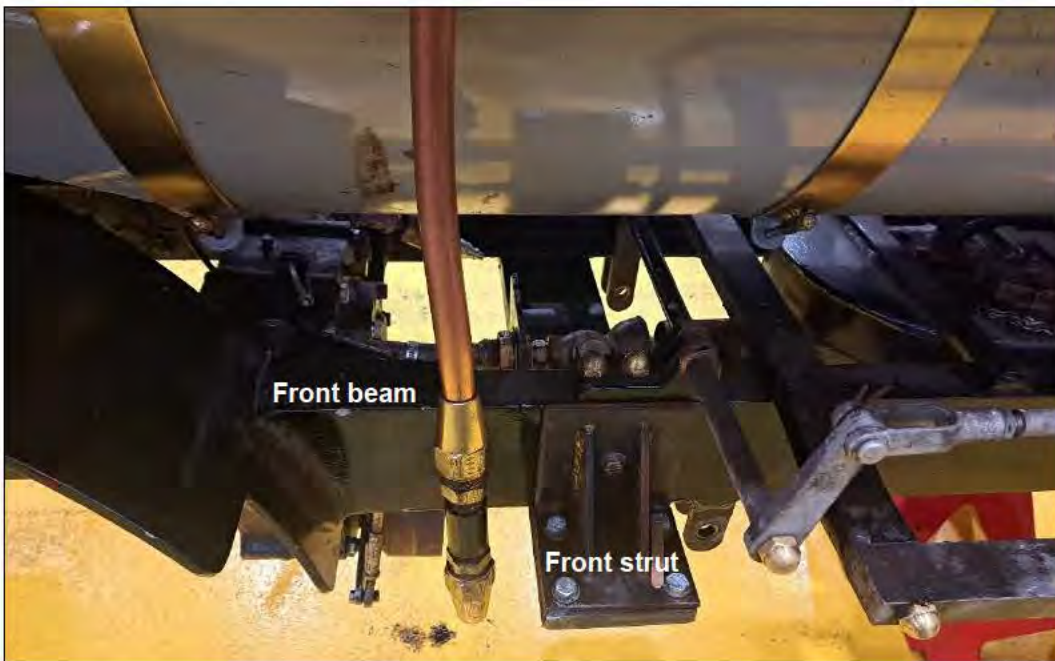
Figure 4 A7910 bogie.



Figure 5 A7910 bogie.



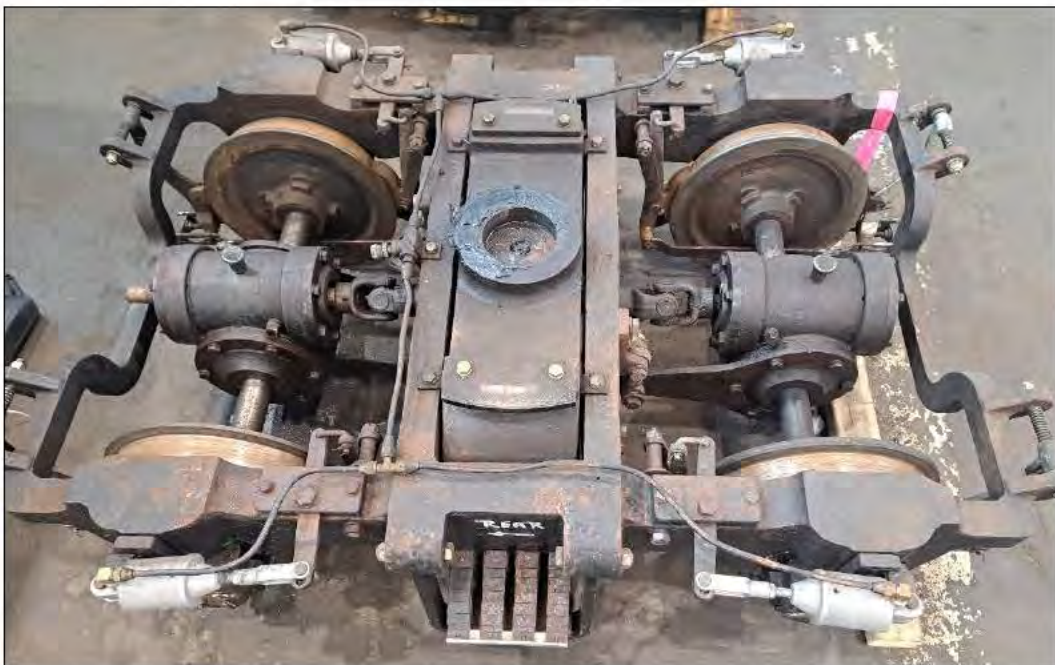
**Figure 6** Red locomotive.



**Figure 7** Red locomotive test locations.



**Figure 8** Green locomotive and bogies.



**Figure 9** Green rear bogie.



**Figure 10** Green front bogie.



**Figure 11** Green front beam.



**Figure 12** Repairs found that used copper filler.



**Figure 13** Repairs found that used copper filler





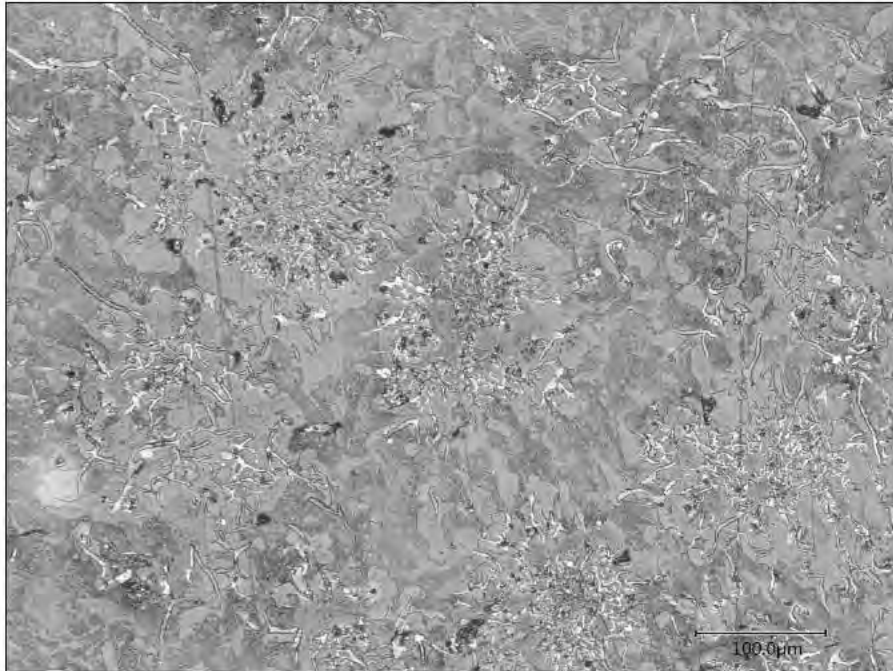
**Figure 14** Areas tested for microstructure and hardness.



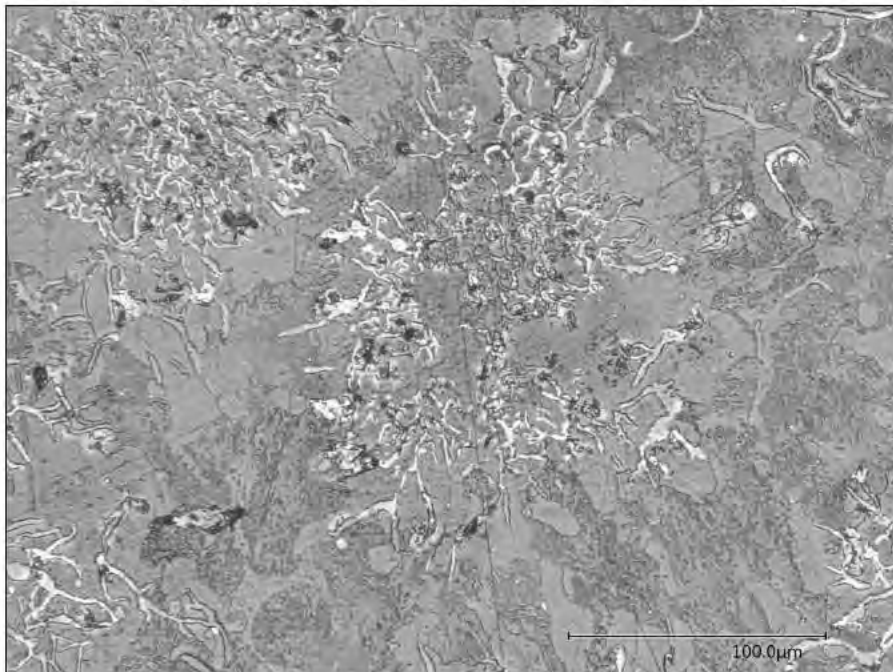
**Figure 15** Area polished to identify any weld repairs – none found.



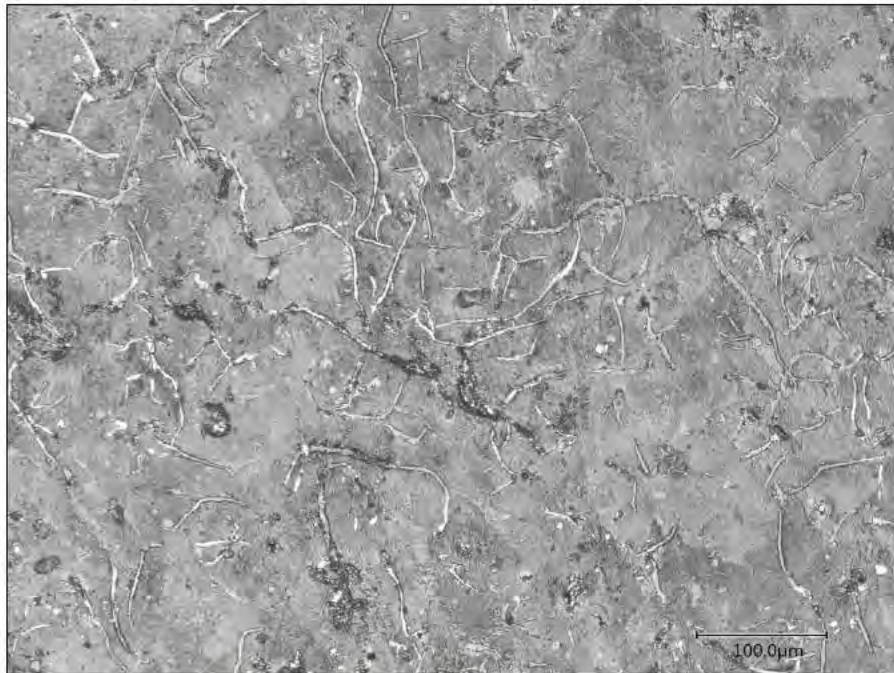
**Figure 16** Area polished to identify any weld repairs – none found.



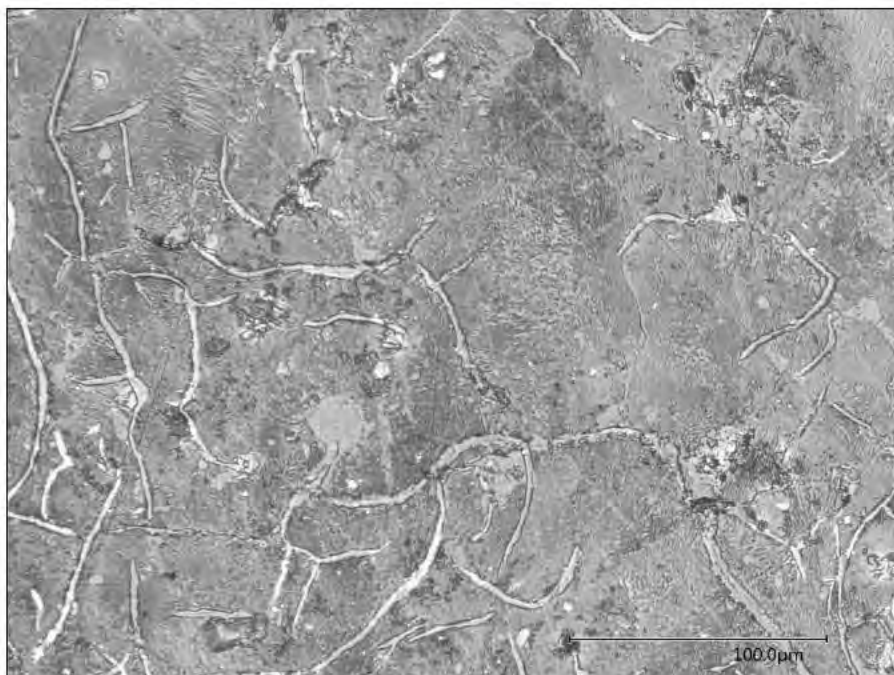
**Figure 17** Replicated microstructure of inner casting. Type B graphite rosettes in pearlitic matrix.



**Figure 18** Replicated microstructure of inner casting. Type B graphite rosettes in pearlitic matrix.



**Figure 19** Replicated microstructure of outer casting. Type A graphite flakes in pearlitic matrix.



**Figure 20** Replicated microstructure of outer casting. Type A graphite flakes in pearlitic matrix.

From: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Grimann, Carla" <Carla.Grimann@vancouver.ca>  
CC: "Neale, Brian" <Brian.Neale@vancouver.ca>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
Date: 9/6/2023 12:32:59 PM  
Subject: FW: A7737

Hi Folks,

See below on the growth work identified by the HD shop for the red train, let us know how to proceed.

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: Neale, Brian <Brian.Neale@vancouver.ca>  
Sent: Wednesday, September 6, 2023 12:29 PM  
To: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Subject: A7737

Hi Mandeep,

Here is the train repair estimate for the Red Train A7737. I will hold off on continuing with any work until the go-ahead has been given to repair train.

List of the repairs we have found on the Red Train A7737 . Upper structure only .

Engine service done , tune up done  
Air lines -, replace old, mismatched lines, re-rout rubbing lines.....20 hrs  
Clean up all the wiring – hanging down, replace old wiring .....40 hrs  
Check compressor – add air backflow check valve and new discharge air lines.....20 hrs  
Coolant hoses – some old hoses leaking .....8 hrs  
Transmission leak – remove oil pan replace gasket.....8 hrs  
Transmission linkage – worn out , needs adjustment/ replacement .....8 hrs  
Transmission rebuild – \$3000 to have rebuilt @ Pacific Driveline, .....10 hrs  
Fuel tank – remove tank and flush.....4 hrs  
Fuel lines – replace old metal fuel lines with new flexible lines.....32 hrs  
Ba eries – replace ba eries .....2 hrs  
Gauges – replace gauges with new illuminated ones..... 8 hrs  
Front drop down gear box leaking – remove gear box and re-seal ..... 16 hrs

Engine – repair small engine oil leaks .....8 hrs  
Brake valve- leaking replace hand valve.....2 hrs  
Exhaust system - no flex pipe on exhaust system , modify exhaust pipe .....20 hrs  
Engine covers and floor covers– rusted and paint flaking o , remove panels and repaint.....20 hrs  
Miscellaneous brackets/ fabrica on work - make brackets for securing hoses and wire harness...10 hrs

236 hrs x \$140 shop rate \$33,000 labour  
Transmission rebuild \$3000  
This does not include any parts or further growth work

*Brian Neale  
Dayshift Foreman  
Heavy Equipment / Tire Shop  
604- 314- 7957*



**From:** "Yip, Rosemary" <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**To:** "Brodie, John" <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>  
**Date:** 11/8/2023 7:54:00 AM  
**Subject:** FW: Follow up to site meeting Oct.30.23

---

Keeping you in the loop of this conversa on...

---

**From:** Yip, Rosemary  
**Sent:** Tuesday, November 7, 2023 8:59 PM  
**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
**Cc:** Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
**Subject:** RE: Follow up to site meeting Oct.30.23

Hi Mandeep,

Your point re: reliability is well taken. No one is more concerned about that than we are, as we deal with the immediate consequences of issues that arise during operations. However, there are other things we are considering and would need support from your team to implement.

Ozzie and I were chatting yesterday about scheduling check-ups on the train over the course of the event, basically taking a pro-active vs reactive approach to maintenance to mitigate the risk of the loco going down.

Steve had asked about the potential for daily support and I think that's probably a stretch for your team. However, can we possibly look at fitting in 1-2 site visits weekly so that the train gets a regular thorough once-over to tighten anything that might have loosened with driving, check for leaks, and perform general trouble-shooting. I know John would support the spend for this level of support.

Our operating hours for Bright Nights are 4pm – 10pm with no maintenance this year. The latter was a strategic decision to allow sufficient time in the morning to perform maintenance since we only have the one train.

We are prepared to cancel rides and issue refunds if need be. Hopefully that's not going to happen if we can schedule those visits that would allow sufficient time for comprehensive checks of all units.

We would be happy to have the red loco back at some point during the event. However, we don't want that to be at the expense of the 4 carriages. Our priority is getting those back in-house for the final inspection on the 27<sup>th</sup> because we can then increase our ticket inventory. Demand will exceed supply when tickets go onsale this Thursday and I anticipate a sellout by the last week of November. Having the ability to add capacity with the 4<sup>th</sup> and 5<sup>th</sup> carriage is critical.

My understanding is that Trevor and Richard have been looking at a couple of bogies that came off a carriage and are of an earlier vintage, presenting some challenges that will require more time and effort to resolve. Because time is running out, the balance of the bogies which are 'good' should be used for the carriages rather than the red loco.

Thanks for sharing your concerns, and John and I deeply appreciate the effort that you and the entire team are putting into this project. It's been a long road and we're almost there with train #1!

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465



Cel s.15(1)(l)  
Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Na on, the x m k y m (Musqueam), s w x w u 7 mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

---

From: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Sent: Tuesday, November 7, 2023 11:46 AM  
To: Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>; Yip, Rosemary <rosemary.yip@vancouver.ca>  
Cc: Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Moyls, Krista <Krista.Moyls@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Aramini, Joe <joe.aramini@vancouver.ca>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Lepore, Ozzie <ozzie.lepore@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Jellema, Richard <richard.jellema@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>  
Subject: RE: Follow up to site meeting Oct.30.23

The concern is the reliability of the power units for the locos hence the recommendation for a second unit. s.13(1) Is there a plan in place if the unit goes down and there's delay in parts or repair? We can schedule weekend work for the red unit and s ll may be really ght to get the unit to you by the start of the event possible mid December if that works I'm happy to continuing on as we have. If the direction is to scale back the priority for the red unit then once the carriages are wrapped up we'll con nue to work on the red unit un l the upper structure is put back together as it currently sprawled across several bays in the shops and deal with the bogies at a later date if its no longer needed for this event.

It'll also give us an opportunity to shi around the priori es for the shop as the pavers are due to arrive any me for the big winter maintenance for the year.

As for the old frames these are the only one we have in the shop currently aside from the one that was decommissioned, not sure what's at the barn. We currently have enough bogies to complete the carriages in the shop. let us know what you decide on the older frames.

Thanks,  
Mandeep S. Shergill, *RSF* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
Sent: Tuesday, November 7, 2023 9:40 AM  
To: Yip, Rosemary <rosemary.yip@vancouver.ca>  
Cc: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>; Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Moyls, Krista <Krista.Moyls@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Aramini, Joe <joe.aramini@vancouver.ca>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Lepore, Ozzie <ozzie.lepore@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Jellema, Richard <richard.jellema@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>  
Subject: Re: Follow up to site meeting Oct.30.23

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Hi Mandeep,

Apologies for the delayed response, I missed your suggestion regarding the bogies for the red locomotive. Per Rosemary's reply, since we're not expecting the red locomotive to be in service for Bright Nights, we have time to fix the bogies properly. I maintain my recommendation of swapping the good bogie frame from the blue locomotive onto the red. Please DO NOT alter any cast bogie components at this point. Given the differences in castings we've recently discovered, we need to understand what's needed going forward (ie: are there more "old style" bogie frames??).

Cheers,

**Derek**

On Fri, Nov 3, 2023 at 9:11\u00239 AM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

Given that we are not expecting to have the red loco ready for Bright Nights, I would support focussing the effort on the carriages for Train #1 at this point and not pulling resourcing away from that work.

Thanks,

Rosemary

---

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Sent:** Friday, November 3, 2023 9:04 AM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

**Cc:** Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moys, Krista <[Krista.Moys@vancouver.ca](mailto:Krista.Moys@vancouver.ca)>; Neale, Brian

<[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe

<[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie

<[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard

<[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

**Subject:** RE: Follow up to site meeting Oct.30.23

Morning Folks,

We have more than enough good frames sitting in the shop painted ready to be used. To save time, money, space and resourcing on the swaps for the blue train its best we use one of the bogies that's been taken off of the carriages. The foreman agree it's the best solution to move the this project along with the crunch of the bright night event being around corner. It'll also leave the blue train intact until a plan for it gets actioned.

Thanks,  
Mandeep S. Shergill, *RSF* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Thursday, November 2, 2023 2:11 PM  
To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: RE: Follow up to site meeting Oct.30.23

Hi everyone,

I would support using the blue bogie on the red loco ve if feasible. I'll leave it to you to coordinate with Krista on moving it to the service pit area.

Confirming that the blue loco ve is not in scope for Phase 1 or 2 of the recommissioning plan, so I'm OK to have the modified bogie from green placed on blue for now, and we can discuss our options in the new year.

@Mandeep: if HHT confirms blue bogie frame is OK, are you able to bring the green bogie to the train and do the swap here?

I know you're short on space in the garage and we don't want to take up room with the blue loco when we haven't yet figured out what to do with it.

Thanks,  
Rosemary

---

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Thursday, November 2, 2023 1:57 PM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Cc: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
Subject: Re: Follow up to site meeting Oct.30.23

Hi again all,

Correction to my previous guidance: Trevor and I took a closer look at the photos we have of the Blue locomotive (A7738). It appears the front bogie is actually not modified. If the unit can be moved to the maintenance pit, we can have a closer look to verify. If we find that bogie frame is indeed unaltered, then we support using it in the red locomotive instead of altering a carriage bogie frame.

Since repairing the Blue locomotive is not in the current scope, I suggest the modified bogie from the A7739 (Green) is swapped onto the blue locomotive for now. As this will not add to the budget, I'll leave this for

Rosemary to review and approve this plan.

Derek

On Thu, Nov 2, 2023 at 1:20\u8239 PM Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Thanks Rosemary!

Thanks,  
Mandeep S. Shergill, *ASCE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: **s.15(1)(l)** ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Thursday, November 2, 2023 12:56 PM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
Subject: RE: Follow up to site meeting Oct.30.23

Hi Mandeep,

You have our ongoing OK to proceed with weekend shifts until we get the last two carriages for train #1 completed and back in-house.  
I think Krista has already responded to the fuel question.

Anything else you need from my end, please let me know.  
Thanks,  
Rosemary

---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Sent: Thursday, November 2, 2023 11:04 AM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
Subject: RE: Follow up to site meeting Oct.30.23

Hi Rosemary,

I should have one set of bogies ready to install ends of day Friday , its taking a bit more time in the assembly process.

As it sits now without any weekend shifts we won't meet the next week timeline. My top priority right now is to have the units completed and sent over to the park, testing and the overall inspection is second. The weekend shifts will definitely help with the overall timeline for the 5 carriages for the end of the month. Brian can be present for the inspection on Nov.27 when Tech BC is on-site.

I'm wanting to bring in a team of 5 Saturday and Sunday 10 hours each day to help move the work along on the disassembly and carriage work for the units in the shop and that arrived Monday. Let me know if I have the green light. Staff would be removing bogies, disassembling, cleaning and replacing parts, running airlines and working through the list of repairs noted in the assessment for the carriages.

Trying to ensure we don't run into any issues with the engine. Has the old fuel that used to fill the trains been replenished with new stuff? I know the trains were down for a few years during COVID if the fuel has been sitting its gone stale and needs to be replaced else it will cause the engine problems.

Hi Derek,

Hallelujah(A7901) train looks to have a refurbished set of bogies that were rebuilt by chance a few years ago and may not require a full rebuild. Derek can provide further guidance on whether we go ahead with the minor check and repairs vs a full rebuild (if I can get an answer before the weekend at least we strip the frames accordingly).

At the last meeting we discussed the bogies that will be used for the red train. Are we replacing one of the repaired frames with one that was removed from a carriage that been stripped and painted or removing a drive assembly from the blue train?

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: **s.15(1)(l)** | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Wednesday, November 1, 2023 5:13 PM  
To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
Subject: RE: Follow up to site meeting Oct.30.23

Hi Derek,

Thanks for the additional information re: bogie rebuilds and also the news about the decision re: Beaver Lake. With respect to the carriages not having adequate testing hours prior to the November 27 inspection, my primary concern is whether we are able to put them into service for Bright Nights without attaining the 40 hours.

As I think I mentioned earlier, I am setting initial ticket inventory for Bright Nights at a very conservative 40 seats per time slot, consistent with having 3 carriages. That will be the number that we go onsale with next week.

I want to ensure that is the number of carriages that TSBC approves for operations. This is our minimum operating level for Bright Nights.

If we are lucky enough to get the last two delivered by the end of the month, I'm hoping we can hook them up to 374 (rather than green loco) and test drive them during the day. Again, we will not be getting in 8 hours a day of driving – we may get 4 hours a day so it will take a minimum of two weeks to attain the 40 hours. If Dave is able to support a third inspection, we might be able to put them into service for the second half of December.

The critical piece of information for us right now is the completion date for the second and third carriages.  
Thanks,

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465  
Cel: s.15(1)(l)  
Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x̱m̱ ḵ y̱ m̱ (Musqueam), s̱w̱x̱w̱817\_ w̱i7mesh (Squamish) and s̱ ḻilw̱ ta̱ (Tsleil-Waututh)*

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Wednesday, November 1, 2023 2:17 PM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
Subject: Re: Follow up to site meeting Oct.30.23

Makes sense Rosemary,

I reflect the same thoughts, and I think we should have all additional units inspected by an FMS mechanic just prior to the final TSBC inspection regardless of the number of hours they've run at that point. I also think it might be a good idea to have a mechanic onsite for the inspection on Nov 27.

Regarding the timeline on the next units, we were advised last week that the bogies require ~24hrs each for the rebuild and there are two full time (to the extent possible) resources on it. With that in mind, I expect another 2-3 to be completed this week and then the remainder next week. I'll leave it to Mandeep to confirm if we can have another two full carriages finished by next week.

After those two, we should have enough bogies ready for one more carriage, but to finish the last carriage we'll need to wait for more bogies to be torn down, re-coated, and rebuilt. Again, I'll leave it to Mandeep to let us know the status of the final units that will come in for repair as I know space is tight.

PS: Regarding the floor corrosion on aft corner of the Beaver Lake carriage, we've decided to let it pass as is and monitor it for now. The missing tack welds do not serve any structural significance and merely act to retain the floor plate. We considered alternatives to repairing by welding (ie: through-bolting the floor to the frame), but found that that may have the unwanted side-effect of weakening the frame, which is structural as it supports the seat.

Derek

On Wed, Nov 1, 2023 at 1:57 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi all,

I would like to point out that it is highly unlikely that units will arrive back in time at the train to be driven for that many hours before the next inspection on November 27.

What is the timeline for delivery on the next two carriages?  
And what would be the ETA for the last two carriages?

Please keep in mind that we are setting up for Bright Nights and we're trying to sandwich in some test-driving too, once the repairs to the track have been made. Those will be completed by the end of next week, we hope. Then we are at November 10 and that gives us 10 working days to get driving hours on the train.

We will likely achieve the 40 hours for the locomotive and one carriage we already have by the 27<sup>th</sup>. Unless the second two can be back here by the time the track is repaired, we won't have much hope of getting the 40 hours driving time for those two units before November 27.

Thanks,  
Rosemary

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Wednesday, November 01, 2023 11:53 AM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moys, Krista <[Krista.Moys@vancouver.ca](mailto:Krista.Moys@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

Subject: Re: Follow up to site meeting Oct.30.23

Apologies if this has been answered, but I agree with Rosemary's approach. Let's inspect the first units at 40 hours, then again at 80. If there's nothing exciting happening after 40 hours on the two units we have now, then the remainder could be inspected at 80 hours or even just the week leading up to final TSBC inspection if it's how the timing works out.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies  
s.22(1)

On Tue, Oct 31, 2023 at 12:11 Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

From what I heard yesterday, we are supposed to drive the train and whatever carriages we have for 40 hours and then your team can check-in with Krista to get her feedback and do any adjustments, re-torquing, etc. that needs to be done. And then again at 80 hours, was what I heard yesterday.

@Derek and @Trevor, can you please comment?  
Thank you.

**Rosemary Yip**  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u0017\_w\u0017mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Sent:** Tuesday, October 31, 2023 12:00 PM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Cc:** Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>;

Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor

Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

**Subject:** RE: Follow up to site meeting Oct.30.23

Hi Rosemary,

At what interval is the recommendation to check the hardware? Is it based on hours or days? We can schedule the check second week of November and go through all the completed units at once. Hoping your able to operate the units thoroughly by then.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellular s.15(1)(l) ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Sent:** Tuesday, October 31, 2023 10:01 AM

**To:** Joseph Cotton <[joecotton@abrail.com](mailto:joecotton@abrail.com)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor

Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

**Cc:** Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>;

Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Subject:** FW: Follow up to site meeting Oct.30.23

Hi everyone,

Sharing the notes from yesterday's site visit.

@Mandeep, just one action item (pt. 5) for your team.

@Joe, can you please send the estimate for the additional track work so I can make sure to add funds to the PO.

Thank you!

**Rosemary Yip**

**Train Operations Team Lead**

**Vancouver Park Board City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her



*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u817\_w\u00f7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

**From:** Dave Lywak <[Dave.Lywak@technicalsaftybc.ca](mailto:Dave.Lywak@technicalsaftybc.ca)>  
**Sent:** Tuesday, October 31, 2023 9:48 AM  
**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Subject:** Follow up to site meeting Oct.30.23

Hi Rosemary,

Please see attached list from yesterday's site meeting in regards issues that need to be addressed.

Please let me know if you need. Any clarification or have any other questions.

Best,

Regards,

**Dave Lywak** | Safety Officer, Elevating Devices, Passenger Ropeways & Amusement Devices

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*As a province-wide organization, Technical Safety BC respectfully recognizes that its employees live and work on the traditional and unceded territories of the many Indigenous Nations that have thrived throughout British Columbia since time immemorial.*

Our latest [State of Safety \[technicalsaftybc.ca\]](http://technicalsaftybc.ca) [[t.sidekickopen22.com](http://t.sidekickopen22.com)] is now live. Find out how we're improving safety across the province.

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From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
Date: 10/4/2023 9:15:21 AM  
Subject: Fwd: FW: Bogie axles

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FYI-

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

----- Forwarded message -----

From: **Shergill, Mandeep** <Mandeep.Shergill@vancouver.ca>  
Date: Wed, Oct 4, 2023 at 08:57  
Subject: RE: FW: Bogie axles  
To: Trevor Gauthier <trevor.gauthier@hedgehogtech.com>, Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
CC: Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>, Gerhard Wilcke <gerhard.wilcke@hedgehogtech.com>, Goh, Bryan <Bryan.Goh@vancouver.ca>, Jellema, Richard <richard.jellema@vancouver.ca>

Thanks ! Rich will be starting work s.22(3)(d) Its best you connect with then.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

Cellular: s.15(1)(l) | Office: 604.326.4770

✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
**Sent:** Wednesday, October 4, 2023 8:35 AM  
**To:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
**Cc:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
**Subject:** Re: FW: Bogie axles

I will be there this afternoon to take a look.

**TREVOR GAUTHIER**

MECHANICAL ENGINEER, EIT



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TECHNOLOGIES

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P: +1.604.210.0204 | C: +s.22(1) E: [trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)

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[www.hedgehogtech.com](http://www.hedgehogtech.com) [\[hedgehogtech.com\]](http://hedgehogtech.com)

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On Wed, Oct 4, 2023 at 7:11\u00239 AM Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)> wrote:

Hi Mandeep,

Thanks for letting me know. Please hold this axle work for the time-being.

If you can produce the WO records that include materials used, etc for the in-house made axle, I'll have a quick review and let you know.

@trevor: Can you make time for a visit to see the worn axle and wheel?

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies  
s.22(1)

On Wed, Oct 4, 2023 at 06:44 Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Thanks Rich.

Morning Derek,

One of the axle's needs to be replaced on the red bogie. We have a spare in the shop that was made in house are we ok to proceed with the axle swap?

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellular: s.15(1)(l) | ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

**Sent:** Wednesday, October 4, 2023 12:22 AM

**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Subject:** Bogie axles

Hello Mandeep

Checked out the drive bogies that are going under the green locomotive and found that one of the axles is worn where the wheel sits, the wheel's worn as well. We have a new axle that was made here and a spare drive wheel, there's also a complete drive assembly, but I'd rather repair the worn drive axle. If I get the go ahead, I could probably have both bogies finished for next Wednesday-Thursday, barring any other major worn parts.

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From: ["Moyls, Krista" <Krista.Moyls@vancouver.ca>](mailto:Krista.Moyls@vancouver.ca)  
To: ["Grimann, Carla" <Carla.Grimann@vancouver.ca>](mailto:Carla.Grimann@vancouver.ca)  
["Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>](mailto:derek.puzzuoli@hedgehogtech.com)  
["Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>](mailto:Mandeep.Shergill@vancouver.ca)  
["Neale, Brian" <Brian.Neale@vancouver.ca>](mailto:Brian.Neale@vancouver.ca)  
CC: ["Yip, Rosemary" <rosemary.yip@vancouver.ca>](mailto:rosemary.yip@vancouver.ca)  
Date: 11/19/2023 12:45:25 PM  
Subject: Issues with the returned loco and carriages  
Attachments: IMG\_0591.jpg

---

We've managed to do about 25 hours of testing since the equipment was returned. There are very few issues so far. The only notable ones are:

1. The "overflow" of grease (see photo) front end of Green A7739 loco, it's enough to pool on the tracks when parked.

\u8194 \u8194 \u8194 2) An airline leak from the right connection (as you're seated in the driver's seat) of Green A7739. We've tried twisting it, and checking for debris, but it's persistent, if negligible, for now.

The carriages seem to be coming back without enough grease in the points on the bogeys, that makes it hard to tell if the groaning/creaking is an issue or just a lack of lubrication. We put in about a tube and a half and haven't noticed any problems in the testing after that

I did the soundtrack test with the music editor yesterday and the stereo sounds fantastic. Thanks for that!

Talk to everyone soon

Krista Moyls

Sub foreman

Stanley Park Railway

s.15(1)(l)

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From: ["Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>](mailto:derek.puzzuoli@hedgehogtech.com)  
To: ["Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>](mailto:Mandeep.Shergill@vancouver.ca)  
CC: ["Jessica Mager" <jmager@acuren.com>](mailto:jmager@acuren.com)  
["Yip, Rosemary" <rosemary.yip@vancouver.ca>](mailto:rosemary.yip@vancouver.ca)  
["Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>](mailto:Timothy.Olderskog@vancouver.ca)  
["Jawanda, Hardeep" <Hardeep.Jawanda@vancouver.ca>](mailto:Hardeep.Jawanda@vancouver.ca)  
["Neale, Brian" <Brian.Neale@vancouver.ca>](mailto:Brian.Neale@vancouver.ca)  
["Dave Lywak" <Dave.Lywak@technicalsaftybc.ca>](mailto:Dave.Lywak@technicalsaftybc.ca)  
["Grimann, Carla" <Carla.Grimann@vancouver.ca>](mailto:Carla.Grimann@vancouver.ca)  
["Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>](mailto:Sergio.Bevilacqua@vancouver.ca)  
["Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>](mailto:trevor.gauthier@hedgehogtech.com)  
["Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>](mailto:gerhard.wilcke@hedgehogtech.com)

Date: 9/8/2023 11:29:24 AM

Subject: Re: [EXT] Re: [EXT] Material Identification List for Acuren

Attachments: image006.png  
image007.png  
image008.jpg  
image009.jpg  
image010.jpg  
image011.jpg  
image007 (1).png

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Hi Mandeep,

I will confirm the next steps for the locomotives via updated repair checklists as requested in your other note to me, but here's a quick summary:

A7737 (Red Locomotive) - Inspection indicated no repairs are present in the areas of concern on the bogies. These are likely casting artifacts and not in the load path. No weld repair will be required, but the areas should be given special attention in future NDT inspections in case of deterioration. HHT will capture this in the maintenance documentation going forward. The bogie subassembly will still require service before reinstalling onto the locomotive.

A7739 (Green Locomotive) - Brake pivot clevis has been repaired with nickel filler. Awaiting welding engineer review for process and work quality. I expect further guidance the middle of this week.

Cheers,

**Derek**

On Fri, Sep 8, 2023 at 11:03\u00239 AM Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Thanks Derek/Jessica. When can we expect a further update on the testing results?

Thanks,

Mandeep S. Shergill, *RSE* Superintendent I

City of Vancouver | Fleet and Manufacturing Services

DayShift Manitoba Garage Operations

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellular **s.15(1)(l)** | ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

Sent: Tuesday, August 29, 2023 11:32 AM

To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Cc: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: RE: [EXT] Re: [EXT] Material Identification List for Acuren

Thanks Derek!

Sergio Bevilacqua , RSE

Acting Superintendent III

Shops/Garage Operations

City of Vancouver | Fleet & Manufacturing Services

250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1

Ce **s.15(1)(l)** Office: 604.326.4721

Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Tuesday, August 29, 2023 11:12 AM  
To: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
Cc: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: [EXT] Re: [EXT] Material Identification List for Acuren

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Hi All,

I will also be on site to meet Jessica, answer any questions, and observe the process. I have a few early morning meetings, but I'm aiming for 9-930 as well.

Cheers,

Derek Puzzuoli

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: **s.22(1)** E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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On Tue, Aug 29, 2023 at 10:19\u008239 AM Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)> wrote:

No problem Jessica! Tim and Hardeep will be here to greet you and show you where everything is including a power outlet.

Thanks

Sergio Bevilacqua , RSE

Acting Superintendent III

Shops/Garage Operations

City of Vancouver | Fleet & Manufacturing Services

250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1

Cel **s.15(1)(l)** Office: 604.326.4721

Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



---

From: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Sent: Monday, August 28, 2023 8:11 AM

To: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: [EXT] RE: [EXT] Material Identification List for Acuren

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---

Thanks Rosemary and Sergio,

I will plan to attend your shop and contact Tim or Hardeep around 9am Wednesday. I will bring all the required PPE. I will just need a power outlet.

Best Regards,

Jessica

**I received and accept the  
WOA [telemetry.eclipsescientific.acuren.com]**

Please click to accept or reply to the email with scope changes. Print, sign and return WOA if you are not comfortable clicking.

Jessica Mager, P.Eng.

FIELD ENGINEERING SERVICES MANAGER, NATIONAL BOARD INSPECTOR (IS/R)

T 604-448-3886 C 604-329-6091

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From: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
Sent: Friday, August 25, 2023 9:40 AM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Jawanda, Hardeep <[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>  
Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalafetybc.ca](mailto:Dave.Lywak@technicalafetybc.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
Subject: RE: [EXT] Material Identification List for Acuren

Thanks for the email Rosemary!

Jessica we are located at 250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1 . We are at the Fleet @ Manufacturing Services Building. I will be away but Tim Olderskog s.15(1)(l) and Hardeep Jawanda s.15(1)(l) are your contacts. They will assist you to the area where all the components you will need. We do require safety steel toe boots also a safety vest and safety glasses. If you don't have these we can provide you with them. Let us know if you need any other information.

Thanks

Sergio Bevilacqua , RSE

Acting Superintendent III

Shops/Garage Operations

City of Vancouver | Fleet & Manufacturing Services

250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1

Cell: s.15(1)(l) Office: 604.326.4721

Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Sent: Friday, August 25, 2023 9:15 AM

To: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>;

Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep

<[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalsaftybc.ca](mailto:Dave.Lywak@technicalsaftybc.ca)>; Grimann, Carla

<[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: RE: [EXT] Material Identification List for Acuren

Hi Jessica,

Thanks for sending the estimate. Acuren is an active vendor in our accounting system, so I won't need anything else

to proceed with ordering the work.

This group will be meeting onsite at 10 am, but I imagine you'll need to start earlier. If you can let us know when you'd be onsite, the team can have the parts ready.

@Sergio, can you please provide Jessica with directions to the garage and anything else she needs to know.

Thanks again and we'll see you next week, Jessica. If you have any questions, please let me know.

Rosemary Yip

Train Operations Team Lead

Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x'm k'y'm (Musqueam), s'wxwú7mesh (Squamish) and s' l'ilw'ta (Tsleil-Waututh)*

---

From: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Sent: Friday, August 25, 2023 8:31 AM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>;

Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep

<[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technicalsaftybc.ca](mailto:Dave.Lywak@technicalsaftybc.ca)>; Grmann, Carla



<[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: [EXT] RE: [EXT] Material Identification List for Acuren

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Hello Rosemary,

It was great speaking with you yesterday and thank you for the parts list. Please see my estimate attached based on most of a day at site and reporting, equipment and mileage charges. I will bring a LIBS for carbon content in steel materials and XRF for any other types of metals and welds. I always bring a hardness tester as well as it helps distinguish different cast irons and any surface hardening or heat treatment condition.

It looks like this yard is right by the Vancouver transfer station?

Best Regards,  
Jessica

Jessica Mager, P.Eng.

FIELD ENGINEERING SERVICES MANAGER, NATIONAL BOARD INSPECTOR (IS/R)

T 604-448-3886 C 604-329-6091

12271 Horseshoe Way, Richmond, BC, V7A 4V4, Canada

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From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Sent: Thursday, August 24, 2023 8:27 PM

To: Jessica Mager <[jmager@acuren.com](mailto:jmager@acuren.com)>

Cc: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>;

Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jawanda, Hardeep

<[Hardeep.Jawanda@vancouver.ca](mailto:Hardeep.Jawanda@vancouver.ca)>; Dave Lywak <[Dave.Lywak@technical-safety.ca](mailto:Dave.Lywak@technical-safety.ca)>; Grimann, Carla

---

<[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

Subject: FW: [EXT] Material Identification List for Acuren

**[External]** This message comes from an external organization. Be careful of embedded links.

Hi Jessica,

Thanks for taking my call earlier today.

Here is the list of parts we'd like to have tested.

I think we would leave the determination of what tests would be required up to you, as you will have a better idea once you get eyes on the parts.

@Derek, please feel free to weigh in on this point.

We will be meeting at the garage at the Manitoba Yard complex on Wednesday 30<sup>h</sup> at 10 am. Please let me know how much time you will need and then we can schedule an appropriate start time, and provide directions if this is your first visit to MY.

Can you also please send a cost estimate as we had discussed?

Thanks very much.

Rosemary Yip

Train Operations Team Lead

Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel s.15(1)(l)

Pronouns: she/her

I acknowledge that we are on the unceded territories of the Coast Salish Na on, the x m k y m (Musqueam), s w w w i 7 mesh (Squamish) and s lilw ta (Tsleil-Waututh)

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Thursday, August 24, 2023 7:06 PM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>  
Subject: [EXT] Material Identification List for Acuren

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Hi Rosemary,

Please find the list of materials we'd like Acuren to help identify in preparation for their visit to MY next week. The general approach is to identify the materials on all components we can access at MY. This will assist us in signing off on the bogies and re-assessing the carriage frames in light of the new information about their re-fabrication.

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: s.22(1) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |  
20 Road, Burnaby, BC, V5M 3Z3, Canada

[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]

 [[t.sidekickopen22.com](http://t.sidekickopen22.com)]  [[t.sidekickopen22.com](http://t.sidekickopen22.com)]  [[facebook.com](http://facebook.com)]

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**From:** "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
**To:** "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
**CC:** "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
**Date:** 11/20/2023 12:46:43 PM  
**Subject:** RE: A7907 wheelchair accessibility kit

---

Hi Trevor,

Thanks for the updated procedure. We have no documentation on what needs to be completed for the conversion kit ,are you able to connect with the fab shop on the accessibility kit installation as this would be the first to be completed at FMS. To save time on the modifications it may beneficial to do the installation of the kit on the old unit that was recently decommissioned.

Thanks,  
**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
☎ Cellula s.15(1)(l) | ☎ Office: 604.326.4770  
✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Trevor Gauthier <trevor.gauthier@hedgehogtech.com>  
**Sent:** Monday, November 20, 2023 9:39 AM  
**To:** Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>  
**Cc:** Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>; Jellema, Richard <richard.jellema@vancouver.ca>; Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Yip, Rosemary <rosemary.yip@vancouver.ca>  
**Subject:** A7907 wheelchair accessibility kit

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Hi all,

In anticipation of the wheelchair accessibility kit arriving from Chance this week, we have updated the A7907 refurbishing procedure to include the installation of the kit.

thanks,

TREVOR GAUTHIER

*MECHANICAL ENGINEER, EIT*



[\[hedgehogtech.com\]](http://hedgehogtech.com)

P: +1.604.210.0204 | C: +1.778.867.6342 | E: [trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)

A: 206-2250 Boundary Road, Burnaby, BC, V5M 3Z3, Canada

[www.hedgehogtech.com](http://www.hedgehogtech.com) [\[hedgehogtech.com\]](http://hedgehogtech.com)

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**From:** "Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
**To:** "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
**CC:** "Grimann, Carla" <Carla.Grimann@vancouver.ca>  
"Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
"Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
**Date:** 10/13/2023 7:13:44 AM  
**Subject:** Re: balance of growth work on the green locomotive

---

Thanks Mandeep!

Sergio

---

**From:** Yip, Rosemary <rosemary.yip@vancouver.ca>  
**Sent:** Thursday, October 12, 2023 1:52:13 PM  
**To:** Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
**Cc:** Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
**Subject:** RE: balance of growth work on the green locomotive

Contractors were due to load in the first week of October and that's why we had to move the carriages ahead of their arrival. We wanted to take delivery of the locomotive around October 23, which is when they were supposed to leave. It's all very fluid, but we're still hoping they're out of here by then.

Krista is onsite with the contractors Monday to Friday until they're done, as they're using our site as a staging area, but I'll try to swing by tomorrow or early next week.

Thank you!

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
rosemary.yip@vancouver.ca  
Tel: 604-257-8465  
Cell: **s.15(1)(l)**  
Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x'm'k'y'm (Musqueam), s'wxwú7mesh (Squamish) and s'liilw'ta (Tsleil-Waututh)*

---

**From:** Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
**Sent:** Thursday, October 12, 2023 1:18 PM  
**To:** Yip, Rosemary <rosemary.yip@vancouver.ca>  
**Cc:** Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
**Subject:** RE: balance of growth work on the green locomotive

I thought the tree work was going to be completed by the first week of October and the loco was needed soon as possible for testing there after? Its fine, We will have it stationed here until then maybe a good idea to have you or Christa to come

down sometime next week to see it.

Let me know what works for you.

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Thursday, October 12, 2023 1:06 PM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Subject: RE: balance of growth work on the green locomotive

Hi Mandeep,

Thanks so much for this update. Great news!

We will need to hold off on the transport of the loco for a couple of weeks until I know that we can take delivery safely. The tree contractor is working onsite now and is anticipated to be out of the track area by the week of October 23-27, though the actual day is not yet confirmed as the work is weather dependent.

I will update ASAP.

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465  
Cel s.15(1)(l)  
Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Na on, the x m k y m (Musqueam), s w x w u 7 mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Sent: Thursday, October 12, 2023 12:55 PM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Subject: RE: balance of growth work on the green locomotive



Hi Rosemary,

Quick update from the weekend we got a bit more completed for the trains this weekend :

2 more bogies were disassembled and sent to the sandblast Tuesday morning. Another one was sent out this morning to be sandblasted.

Bogies from the red train has been completed and ready for install.

### Green Unit

Floors are going in, front dash panel, side counter weights, currently securing them down. Auxiliary batteries need to go in and then hook up all aux. wires to batteries for charging and inverter. Side dummy wheels need to go back on. Run engine and get hot and check for any issues, small adjustments. Install bogie assemblies.

If all goes well this unit will be wrapped up late Friday or Monday and ready for transport Monday or Tuesday. I'll keep you posted. Your welcome to drop by tomorrow to see the work completed on the unit.

### Passenger Carts Update

Beaver Lake A7904 – Up on stands in shop. Getting new air lines unit in shop

Brockton Point A7906 – Up on stands in shop. Waiting to get new air lines

Siwash Rock A7910 – New air lines installed and leak tested, fab shop has looked over chassis. Waiting for bogie assemblies Unit on West

Thanks,

Mandeep S. Shergill, *ASCE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular s.15(1)(l) | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Sent: Thursday, October 5, 2023 2:27 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>

Subject: Re: balance of growth work on the green locomotive

Thanks Rosemary. I'll schedule staff and provide an update next week Wednesday or Thursday.

---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Sent: Thursday, October 5, 2023 2:21:26 PM

To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>

Subject: RE: balance of growth work on the green locomotive

Hi Mandeep,

We are good with scheduling the weekend work.

Thank you.

Rosemary

---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Sent: Thursday, October 05, 2023 1:18 PM

To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>

Subject: Re: balance of growth work on the green locomotive

Hi Derek,

We're anticipating the green unit to be completed by October 18-19 without any extra weekend shifts. We are running to some extra delay with the driveline for the compressor for this unit which requires a bit more R&D to setup the correct angles for installation than what we anticipated originally.

Hi Rosemary ,

There is capacity to bring staff to work on the weekend to help with this timeline and the overall carriages timelines:

Proposing to bring in 3 staff to work on Monday for a 10-12 hours.

- Continue to work on the red train bogies (we do have spare springs that can be swapped at this time as well)
- Strip the carriages bogies and have few more prepped to be sent out for sandblasting and painting for Tuesday Morning.
- Gurmukh to continue work on the green train and complete the odds and ends.

I can provide a further update on a completion date after the long weekend if the weekend work gets the green light on your end. let me know please.

Thanks Mandeep

---

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Thursday, October 5, 2023 7:23:54 AM


To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Subject: Re: re: balance of growth work on the green locomotive

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Sounds good Mandeep,

How about the final test and shipment preparation?

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Thu, Oct 5, 2023 at 06:18 Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Morning Derek,

The springs for this unit weren't going to be replaced due to the last rebuild. If the axle can be signed off, the bogies should be ready to be installed by next week Wednesday or Thursday.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

Cellular: **s.15(1)(l)** | Office: 604.326.4770

✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

**Sent:** Wednesday, October 4, 2023 4:37 PM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Cc:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>;

Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Subject:** Re: re: balance of growth work on the green locomotive

Thanks Mandeep,

Question: If we were to sign off on the fabricated axle and skip the spring replacement on the red bogies, how quickly could we get the green locomotive to the final test?

(we understand the springs would need replacement later, but those are from 2017 and still have some life)

Derek

On Wed, Oct 4, 2023 at 3:47\u00239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Thanks Mandeep!

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Sent:** Wednesday, October 4, 2023 3:12 PM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Subject:** RE: re: balance of growth work on the green locomotive

Hi Rosemary,

What's left:

- Install ignition switch (arrived today)
- Install accessory drive shaft pillar block (fab shop)
- Install accessory drive shaft
- Floor to be trimmed/cut and installed (fab shop)
- Install dash and connect to harness

- 2x seats to be reupholstered (repaired will be picked up tomorrow)
- Replace inverter (order submitted, part is local)
- Inspect bogies from Red unit. Replace hardware , journal box caps, brake pads, torque all fasteners , and replace fluids on the bogie set
- Repair/replace axle shaft
- Install bogies
- Test system repairs and organize transport

**Thanks,**

**Mandeep S. Shergill, *RSE* Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellula **s.15(1)(l)** | ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)

**Error! Filename not specified.**

**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Sent:** Wednesday, October 4, 2023 9:54 AM

**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier

<[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

**Subject:** RE: re: balance of growth work on the green locomotive

Hi Mandeep,

I saw that, and it was very helpful to know about the axle shaft.

However, that doesn't include a comprehensive list of the rest of the work.

We'd like to know the complete scope of the growth work that has yet to be completed.

Thanks very much for your help.

## Rosemary Yip

Train Operations Team Lead

Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wxwú7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Sent:** Wednesday, October 4, 2023 9:50 AM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

**Subject:** RE: re: balance of growth work on the green locomotive

Morning Rosemary,

Ozzie's already sent John an update for the green and carriages this morning.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**

**City of Vancouver | Fleet and Manufacturing Services**

**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellular: s.15(1)(l) ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)

**Error! Filename not specified.**

**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Sent:** Wednesday, October 4, 2023 9:47 AM

**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier

<[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>

**Subject:** re: balance of growth work on the green locomotive

**Importance:** High

Hi Mandeep,

Can you please provide an update on the status of the green loco and a list of the remaining growth work for us today?

I've got a meeting later this afternoon with John to discuss.

Thanks very much.

## Rosemary Yip

**Train Operations Team Lead**

**Vancouver Park Board City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wxwú7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

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**From:** "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
**To:** "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
**CC:** "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Aramini, Joe" <joe.aramini@vancouver.ca>  
"Traviss, Rob" <rob.traviss@vancouver.ca>  
"Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
**Date:** 11/10/2023 12:01:46 PM  
**Subject:** RE: Carriage and Locomotive Bogies

---

Hi Derek,

We will continue work on the red loco unfortunately it wont make the Tech BC inspection timeline for Nov.27.As discussed we will be focusing on the carriages and should have 2 delivered for the following Wednesday and the last 2 before the inspection date.

We will leave the older style bogies aside until we get direction from you. I have requested the blue loco be transported to Manitoba next week so we can have a look at the bogies currently on it and decide next steps. Once the carriages are out the door the red loco will be our main focus and we can decide how quickly it needs to be completed.

s.22(1) and Rob T will be covering for me. I will follow up once I return. Have a great weekend !

Thanks,  
**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
☎ Cellula s.15(1)(l) ☎ Office: 604.326.4770  
✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
**Sent:** Friday, November 10, 2023 10:55 AM  
**To:** Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>; Yip, Rosemary <rosemary.yip@vancouver.ca>  
**Cc:** Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Gerhard Wilcke <gerhard.wilcke@hedgehogtech.com>  
**Subject:** Carriage and Locomotive Bogies

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Hi Mandeep,

In regards to the ongoing discussion regarding the modification of carriage bogies to serve as locomotive bogies, we recognize the thought, talent, and experience that's behind the push from your side. However, we must maintain our recommendation against it until we investigate the drive bogie removed from the blue locomotive.

While we don't believe the modification will pose a considerable risk, per the ASTM F24 standards that HHT follows as ride engineers, modifications to OEM components are typically a last resort. We're not there yet, if we exhaust the possibility of using the bogie from the blue locomotive, then HHT will reconsider. Further, Parks has weighed their operational risk internally and has prioritized the remaining carriages above the red locomotive. It is still hoped that the red locomotive will enter service as soon as it can, but it's likely to miss the TSBC inspection date in our estimation (please correct me if I'm wrong).

In regards to the bogies of a differing vintage, there are multiple fitment issues on them including with the bogie-to-carriage interaction. Prioritizing these (or having one converted into a drive bogie), presents another set of unknowns that HHT and Parks are unwilling to accept while we already have enough of the overhauled bogies in process to meet the needs of the 5 carriages. Trevor is investigating this closely with Rich and intends to have a complete plan for the older bogies early next week. If that plan shows that we can accelerate the delivery on a carriage with them, we would recommend diverting Rich's effort to them at that point.

I hope this provides some transparency into our thinking. As always we're willing to be flexible as we learn more, but for now, we must focus on the overhauled bogies for reassembly to carriages.

Cheers,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.*

*Hedgehog Technologies Inc.*

P: [s.22\(1\)](#) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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From: "Neale, Brian" <Brian.Neale@vancouver.ca>  
To: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
"Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
CC: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Moyls, Krista" <Krista.Moyls@vancouver.ca>  
"Aramini, Joe" <joe.aramini@vancouver.ca>  
"Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
"Grimann, Carla" <Carla.Grimann@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
Date: 11/3/2023 10:00:58 AM  
Subject: RE: Follow up to site meeting Oct.30.23

---

The bogies are out of A7901 if you want to come by today and take a look.

*Brian Neale*  
*Dayshift Foreman*  
*Heavy Equipment / Tire Shop*  
s.15(1)(l)



---

From: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Sent: Friday, November 03, 2023 7:06 AM  
To: Trevor Gauthier <trevor.gauthier@hedgehogtech.com>  
Cc: Yip, Rosemary <rosemary.yip@vancouver.ca>; Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>; Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Moyls, Krista <Krista.Moyls@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>; Aramini, Joe <joe.aramini@vancouver.ca>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Lepore, Ozzie <ozzie.lepore@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>; Jellema, Richard <richard.jellema@vancouver.ca>  
Subject: RE: Follow up to site meeting Oct.30.23

Thanks Trevor. We can have the bogies out today for you take a look so the team can continue to work on the weekend . let me know if your able to drop by and what time.

Thanks,  
Mandeep S. Shergill, *RSF* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

Cellular: s.15(1)(l) | Office: 604.326.4770

mandeep.shergill@vancouver.ca



From: Trevor Gauthier <trevor.gauthier@hedgehogtech.com>

Sent: Thursday, November 2, 2023 2:34 PM

To: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>; Jellema, Richard <richard.jellema@vancouver.ca>

Cc: Yip, Rosemary <rosemary.yip@vancouver.ca>; Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>; Bevilacqua, Sergio

<Sergio.Bevilacqua@vancouver.ca>; Moyls, Krista <Krista.Moyls@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>;

Aramini, Joe <joe.aramini@vancouver.ca>; Olderskog, Timothy <Timothy.Olderskog@vancouver.ca>; Lepore, Ozzie

<ozzie.lepore@vancouver.ca>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>

Subject: Re: Follow up to site meeting Oct.30.23

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Hi Mandeep,

Attached are current revisions of the refurbishment checklists for the carriages. We had intended to transmit these to you sooner, but priority was low since the only revisions made since the July 6th release were the removal of the bogie refurbishment steps in favour of a stand-alone bogie procedure (23-003-WI018). 23-003-WI005 for A7901 has been updated to reflect removing the bogies for inspection and adjustment, but no further disassembly is required (pending the inspection outcome). Let us know when these A7901 bogies are ready for us to come take a look at. Note that we can fill out the checklist for A7910 that's already been delivered. Please distribute these as you see fit.

Thanks,

**TREVOR GAUTHIER**

MECHANICAL ENGINEER, EIT



**hedgehog**  
TECHNOLOGIES

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On Thu, Nov 2, 2023 at 2:10 PM Yip, Rosemary <rosemary.yip@vancouver.ca> wrote:

Hi everyone,

I would support using the blue bogie on the red loco if feasible. I'll leave it to you to coordinate with Krista on moving it to the service pit area.

Confirming that the blue loco is not in scope for Phase 1 or 2 of the recommissioning plan, so I'm OK to have the modified bogie from green placed on blue for now, and we can discuss our options in the new year.

@Mandeep: if HHT confirms blue bogie frame is OK, are you able to bring the green bogie to the train and do the swap here?

I know you're short on space in the garage and we don't want to take up room with the blue loco when we haven't yet figured out what to do with it.

Thanks,  
Rosemary

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Thursday, November 2, 2023 1:57 PM

To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Cc: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: Re: Follow up to site meeting Oct.30.23

Hi again all,

Correction to my previous guidance: Trevor and I took a closer look at the photos we have of the Blue locomotive (A7738). It appears the front bogie is actually not modified. If the unit can be moved to the maintenance pit, we can have a closer look to verify. If we find that bogie frame is indeed unaltered, then we support using it in the red locomotive instead of altering a carriage bogie frame.

Since repairing the Blue locomotive is not in the current scope, I suggest the modified bogie from the A7739 (Green) is swapped onto the blue locomotive for now. As this will no doubt affect the budget, I'll leave this for Rosemary to review and approve this plan.

Derek

On Thu, Nov 2, 2023 at 1:20\u00239 PM Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Thanks Rosemary!

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellula **s.15(1)(l)** | ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Sent: Thursday, November 2, 2023 12:56 PM

To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie

---

<[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: RE: Follow up to site meeting Oct.30.23

Hi Mandeep,

You have our ongoing OK to proceed with weekend shifts until we get the last two carriages for train #1 completed and back in-house.

I think Krista has already responded to the fuel question.

Anything else you need from my end, please let me know.

Thanks,

Rosemary

---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Sent: Thursday, November 2, 2023 11:04 AM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian

<[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Aramini, Joe

<[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Olderskog, Timothy <[Timothy.Olderskog@vancouver.ca](mailto:Timothy.Olderskog@vancouver.ca)>; Lepore, Ozzie

<[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Jellema, Richard

<[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: RE: Follow up to site meeting Oct.30.23

Hi Rosemary,

I should have one set of bogies ready to install ends of day Friday , its taking a bit more time in the assembly process. As it sits now without any weekend shifts we wont meet the next week timeline. My top priority right now is to have the units completed and sent over to the park, testing and the overall inspection is second .The weekend shifts will definitely help with the overall timeline for the 5 carriages for the end of the month. Brian can be present for the inspection on Nov.27 when Tech BC on-site.

I'm wan ng to bring in a team of 5 Saturday and Sunday 10 hours each day to help move the work along on the disassembly and carriage work for the units in the shop and that arrived Monday. Let me know if I have the green light. Staff would removing bogies disassembling, cleaning and replacing parts, running airlines and working through the list of repairs noted in the assessment for the carriages.

Trying to ensure we don't run into any issues with the engine. Has the old fuel that used to fill the trains been replenished with new stuff? I know the trains were down for a few years during COVID if the fuel been sitting its gone stale and needs to be replaced else it will cause the engine problems.

Hi Derek,

Hallelujah(A7901) train looks to have a refurbished set of bogies that were rebuilt by chance a few years ago and may not require a full rebuild. Derek can provide further guidance on whether we go ahead with the minor check and repairs vs a full rebuild (if I can get an answer before the weekend at least we strip the frames accordingly).

At the last meeting we discussed the bogies that will be used for the red train. Are we replacing one of the repaired frames with one that was removed from a carriage that been stripped and painted or removing a drive assembly from the blue train?

Thanks,  
Mandeep S. Shergill, *ASCE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Wednesday, November 1, 2023 5:13 PM  
To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
Subject: RE: Follow up to site meeting Oct.30.23

Hi Derek,

Thanks for the additional information re: bogie rebuilds and also the news about the decision re: Beaver Lake. With respect to the carriages not having adequate testing hours prior to the November 27 inspection, my primary concern is whether we are able to put them into service for Bright Nights without attaining the 40 hours.

As I think I mentioned earlier, I am setting initial ticket inventory for Bright Nights at a very conservative 40 seats per time slot, consistent with having 3 carriages. That will be the number that we go onsale with next week.

I want to ensure that is the number of carriages that TSBC approves for operations. This is our minimum operating level for Bright Nights.

If we are lucky enough to get the last two delivered by the end of the month, I'm hoping we can hook them up to 374 (rather than green loco) and test drive them during the day. Again, we will not be getting in 8 hours a day of driving – we may get 4 hours a day so it will take a minimum of two weeks to attain the 40 hours. If Dave is able to support a third inspection, we might be able to put them into service for the second half of December.

The critical piece of information for us right now is the completion date for the second and third carriages.

Thanks,

Rosemary Yip  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465  
Cel s.15(1)(l)  
Pronouns: she/her

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---

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Wednesday, November 1, 2023 2:17 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

Subject: Re: Follow up to site meeting Oct.30.23

Makes sense Rosemary,

I reflect the same thoughts, and I think we should have all additional units inspected by an FMS mechanic just prior to the final TSBC inspection regardless of the number of hours they've run at that point. I also think it might be a good idea to have a mechanic onsite for the inspection on Nov 27.

Regarding the timeline on the next units, we were advised last week that the bogies require ~24hrs each for the rebuild and there are two full time (to the extent possible) resources on it. With that in mind, I expect another 2-3 to be completed this week and then the remainder next week. I'll leave it to Mandeep to confirm if we can have another two full carriages finished by next week.

After those two, we should have enough bogies ready for one more carriage, but to finish the last carriage we'll need to wait for more bogies to be torn down, re-coated, and rebuilt. Again, I'll leave it to Mandeep to let us know the status of the final units that will come in for repair as I know space is tight.

PS: Regarding the floor corrosion on aft corner of the Beaver Lake carriage, we've decided to let it pass as is and monitor it for now. The missing tack welds do not serve any structural significance and merely act to retain the floor plate. We considered alternatives to repairing by welding (ie: through-bolting the floor to the frame), but found that that may have the unwanted side-effect of weakening the frame, which is structural as it supports the seat.

Derek

On Wed, Nov 1, 2023 at 1:57\u00a0PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi all,

I would like to point out that it is highly unlikely that units will arrive back in time at the train to be driven for that many hours before the next inspection on November 27.

What is the timeline for delivery on the next two carriages?  
And what would be the ETA for the last two carriages?

Please keep in mind that we are se ng up for Bright Nights and we're trying to sandwich in some test-driving too, once the repairs to the track have been made. Those will be completed by the end of next week, we hope. Then we are at November 10 and that gives us 10 working days to get driving hours on the train.

We will likely achieve the 40 hours for the locomotive and one carriage we already have by the 27<sup>th</sup>. Unless the second two can be back here by the me the track is repaired, we won't have much hope of ge ng the 40 hours driving time for those two units before November 27.

Thanks,  
Rosemary

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Wednesday, November 01, 2023 11:53 AM



To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

Subject: Re: Follow up to site meeting Oct.30.23

Apologies if this has been answered, but I agree with Rosemary's approach. Let's inspect the first units at 40 hours, then again at 80. If there's nothing exciting happening after 40 hours on the two units we have now, then the remainder could be inspected at 80 hours or even just the week leading up to final TSBC inspection if it's how the timing works out.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Tue, Oct 31, 2023 at 12:11 Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

From what I heard yesterday, we are supposed to drive the train and whatever carriages we have for 40 hours and then your team can check-in with Krista to get her feedback and do any adjustments, re-torquing, etc. that needs to be done. And then again at 80 hours, was what I heard yesterday.

@Derek and @Trevor, can you please comment?

Thank you.

**Rosemary Yip**  
Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u817\_w\u007mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

**Sent:** Tuesday, October 31, 2023 12:00 PM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Cc:** Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>;

Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor

Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>

**Subject:** RE: Follow up to site meeting Oct.30.23

Hi Rosemary,

At what interval is the recommendation to check the hardware? Is it based on hours or days? We can schedule the check second week of November and go through all the completed units at once. Hoping your able to operate the units thoroughly by then.

**Thanks,**

**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) | ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Sent:** Tuesday, October 31, 2023 10:01 AM  
**To:** Joseph Cotton <[joecotton@abrail.com](mailto:joecotton@abrail.com)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
**Cc:** Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
**Subject:** FW: Follow up to site meeting Oct.30.23

Hi everyone,

Sharing the notes from yesterday's site visit.

@Mandeep, just one action item (pt. 5) for your team.

@Joe, can you please send the estimate for the additional track work so I can make sure to add funds to the PO.

Thank you!

**Rosemary Yip**

**Train Operations Team Lead**  
**Vancouver Park Board City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u0017\_w\u0017mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

**From:** Dave Lywak <[Dave.Lywak@technicalssafetybc.ca](mailto:Dave.Lywak@technicalssafetybc.ca)>

**Sent:** Tuesday, October 31, 2023 9:48 AM

**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Subject:** Follow up to site meeting Oct.30.23

Hi Rosemary,

Please see attached list from yesterday's site meeting in regards issues that need to be addressed.

Please let me know if you need. Any clarification or have any other questions.

Best,

Regards,

**Dave Lywak** | Safety Officer, Elevating Devices, Passenger Ropeways & Amusement Devices

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[technicalafetybc.ca](http://technicalafetybc.ca) [\[technicalafetybc.ca\]](http://technicalafetybc.ca) [\[t.sidekickopen22.com\]](http://t.sidekickopen22.com)

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From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
 To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
 "Brodie, John" <John.Brodie@vancouver.ca>  
 CC: "Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
 Date: 10/6/2023 4:37:59 PM  
 Subject: Re: FW: HHT Work Instructions for FMS

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Hi John and Rosemary,

I've prepared a summary of the updated schedule from our working Gantt chart. It differs from Ozzie's advisement on the green locomotive and the first carriages, so I wanted to share it with a smaller group before updating the full team. Mandeep provided the updated date for the green locomotive, but in addition, our estimates show that the first carriages should be finished fairly quickly once after parts are received from Chance because there are 4 bogies that should be ready to be assembled and installed by then.

Unit	Start	Finish (earliest feasible)	Status	Comments
Carriage A7905 Lumberman's Arch	2023.06.12	2023.08.21	Decomissioned	
Locomotive A7739 (Green)	2023.06.12	2023.10.19	In Process	
Carriage A7902 Lion's Gate	2023.06.12	2023.09.22	Decomissioned	
Locomotive A7737 (Red)	2023.08.23	2023.12.06	Hold	
Carriage A7910 Unnamed (Siwash Rock)	2023.08.23	2023.11.01	In Process	
BOGIE REBUILD 1 - A7902, A7905, A7910	2023.09.18	2023.10.26	Awaiting parts	4 usable bogie structures from 6 bogies
Carriage A7904 Beaver Lake	2023.09.25	2023.11.02	Up Next	
Carriage A7906 Brockton Point	2023.09.25	2023.11.03	Up Next	
BOGIE REBUILD 2 - A7904, A7906	2023.10.16	2023.10.27	Up Next	4 usable bogie structures (assumed)
Carriage A7901 Hallelujah Point	2023.11.03	2023.11.20	In Storage	
Carriage A7907 Ferguson Point	2023.11.03	2023.11.24	In Storage	
BOGIE REBUILD 3 - A7901, A7907	2023.11.06	2023.11.20	In Storage	4 usable bogie structures (assumed)

I hope this ends the week on an optimistic note. Have a great long weekend.

**Derek Puzzuoli**

Lead Mechanical Engineer, P.Eng.  
 Hedgehog Technologies Inc.

P: s.22(1) | E: derek.puzzuoli@hedgehogtech.com |  
 2 \_\_\_\_\_ Road, Burnaby, BC, V5M 3Z3, Canada  
[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]



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From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
To: "Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
CC: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
"Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
"Aramini, Joe" <joe.aramini@vancouver.ca>  
"Brodie, John" <John.Brodie@vancouver.ca>  
"Russell, Scott" <scott.russell@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>

Date: 9/20/2023 1:27:27 PM

Subject: Re: FW: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Attachments: image001.png  
image001 (1).png

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Hi Sergio,

No problem. I've reviewed the coating info and it looks adequate for this application. We can inspect the castings after sandblasting as it may expose areas of interest that we need to document. Trevor will be back today or tomorrow depending on how his afternoon goes. Let us know if he needs to be there sooner.

Cheers,

**Derek**

On Wed, Sep 20, 2023 at 12:51\u00239 PM Bevilacqua, Sergio  
<[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)> wrote:

Hi Derek,

Thank you for clarification on the questions below. I agree that any coating is better than none. Our first choice would be the paint we have specified in the attachment I have included in this email. Please have a look and confirm if HH is okay for us to proceed. We also have 2 bogies stripped down to castings for you to inspect as you requested. Do you want to look at these before sandblasting or after sandblasting?

Thanks

Sergio Bevilacqua , RSE

Acting Superintendent III

Shops/Garage Operations

City of Vancouver | Fleet & Manufacturing Services

250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1

Cel s.15(1)(l) Office: 604.326.4721

Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Wednesday, September 20, 2023 12:20 PM

To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Cc: Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Yip,

Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Lepore, Ozzie

<[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>;

Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Jellema, Richard

<[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>

Subject: Re: FW: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi Mandeep and Sergio,

Thanks for reaching out for further clarifications. To answer questions from both of you:

1) (Sergio) Is there a specific procedure for the carriages? Will HH be inspecting the carriages with recommendations?

HHT: Yes, we released and delivered the checklists for the carriages on July 6. These should still be valid, but will contain redundant procedural steps now that we've delivered a stand-alone bogie checklist / procedure. We intend to revise all of the checklists to omit the bogie refurbishment and deliver shortly, but this should not cause delay as the non-bogie related steps will not change.

2) (Sergio) Also for the bogie castings the recommendation is a corrosion inhibiting paint specified by Chance Rides or otherwise approved in writing by HH. Can we sandblast the castings and powder coat? HHT: Chance does not specify, but almost any coating is better than no coating like they have now. Blasting and powdercoating would be a significant upgrade, but we would have to take care not to affect the fitment of fasteners, pins, and other hardware through the casting's mounting holes, etc. This can be done by plugging all mounting holes with the discarded fasteners from the rebuild before powdercoating and then disposing of them upon completion.

3) (Mandeep) Trevor was at the shop yesterday was he able to get measurements and have a look at the bare frames located in the machine shop? Are we able to proceed with rebuilding them? HHT: You are able to proceed with the "Disassemble" and "Inspect / Salvage / Recondition" stages of the bogie refurbishment procedure (HHT# 23-003-WI018). We should have the remaining parts needed for reassembly by or before completion of these stages. **Work must commence prior to the balance of parts arriving. It is currently the critical path for the carriage unit refurbishments.**

4) (Mandeep) The tow bars bulletin B102R1227-0 Does it apply to both locomotives and carriages ? Have any parts been ordered or can the bars be made in house with HH sign off? HHT: These were not ordered. We're looking into availability with Chance. Trevor will be in to collect some more information on them soon. This will not cause any delays.

5) Safety bulletin 02R1106-0: Have the safety decals that need to be affixed to the back of the seat been ordered? DHHT: Rosemary has informed us that these will be printed in-house.

I hope this helps!

Derek

On Wed, Sep 20, 2023 at 9:49\u8239 AM Shergill, Mandeep  
<[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Hi Derek,

Thanks for sending the updated plan I'm including both foramen (City of Vancouver) for the 23-003-WI018. Page 205 of 270 there

aware. Trevor was at the shop yesterday was he able to get measurements and have a look at the bare frames located in the machine shop? Are we able to proceed with rebuilding them? Brian and Trevor were chatting about the need to replace hardware for the previously built units, is it still required (grade 8 bolts were used)?

Additional Questions :

Ø The tow bars bulletin B102R1227-0 Does it apply to both locomotives and carriages ? Have any parts been ordered or can the bars be made in house with HH sign off?

Ø Safety bulletin 02R1106-0 Have the safety decals that need to be affixed to the back of the seat been ordered ?

Thanks,

Mandeep S. Shergill, *RSF* Superintendent I

City of Vancouver | Fleet and Manufacturing Services

DayShift Manitoba Garage Operations

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

( Cellular: s.15(1)(l) ( Office: 604.326.4770

\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Tuesday, September 19, 2023 1:53 PM

To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Cc: Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>;

Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Bevilacqua, Sergio

<[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Aramini, Joe

<[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>

Subject: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies



Hi Mandeep,

Per our most recent discussions, please find the subject documents attached.

A few notes to explain the intended procedure for the locomotives-

1) Per FMS maintenance records, the bogies for A7737 (red locomotive) and A7739 (green locomotive) were fully rebuilt in 2017 and 2015, respectively.

2) In general, the major wear items (brakes, wheels, springs) from both bogies appear to have considerable service life left and we do not recommend a full rebuild for either bogie at this point.

3) However, since we need a good baseline, wear items should be inspected, tested, and repaired as necessary. This will require some disassembly, which is detailed in the checklists.

4) Per Chance's recommendations (Maintenance Manual pg 15), *"...any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled..."* - Since the work was done over 5 years ago, if we remove any fasteners from the bogies, they should be replaced at a minimum. While the minimum would be fine, we recommend replacing all fasteners, re-torquing, and torque striping as this would be much easier to keep track of now and going forward.

5) Correction on fastener grade: Chance basically specifies "Grade 5 or better". Since we're shorted fasteners for A7737 (as it wasn't planned when the parts order was placed with Chance), we have more leeway to use stock or locally sourced fasteners as long as they match in size and coatings, etc.

6) If the checklists are followed, the bogies for both units should have years of service left in them. Preventive inspection and maintenance will ensure this further and provide early indication of service requirements. This will be specified in the operational checklists HHT will deliver prior to opening.

As discussed, Trevor will be onsite this afternoon to review progress and talk to anyone there. Please let us know if you need any more info on these checklists. We'll be working closely with you on them and happy to make adjustments as needed.

Cheers,

Derek Puzzuoli

Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.

P: s.22(1) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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**From:** "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
**To:** "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
**CC:** "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Grimann, Carla" <Carla.Grimann@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
**Date:** 10/5/2023 6:18:37 AM  
**Subject:** RE: re: balance of growth work on the green locomotive

---

Morning Derek,

The springs for this unit weren't going to be replaced due to the last rebuild. If the axle can be signed off, the bogies should be ready to be installed by next week Wednesday or Thursday.

Thanks,

**Mandeep S. Shergill, *RSE* Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

Cellular: s.15(1)(l) | Office: 604.326.4770

✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>

**Sent:** Wednesday, October 4, 2023 4:37 PM

**To:** Yip, Rosemary <rosemary.yip@vancouver.ca>

**Cc:** Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Grimann, Carla <Carla.Grimann@vancouver.ca>; Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>

**Subject:** Re: re: balance of growth work on the green locomotive

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Thanks Mandeep,

Question: If we were to sign off on the fabricated axle and skip the spring replacement on the red bogies, how quickly could we get the green locomotive to the final test?

(we understand the springs would need replacement later, but those are from 2017 and still have some life)

**Derek**

On Wed, Oct 4, 2023 at 3:47\u8239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Thanks Mandeep!

---

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
**Sent:** Wednesday, October 4, 2023 3:12 PM  
**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
**Subject:** RE: re: balance of growth work on the green locomotive

Hi Rosemary,

What's left:

- Install ignition switch (arrived today)
- Install accessory drive shaft pillar block (fab shop)
- Install accessory drive shaft
- Floor to be trimmed/cut and installed (fab shop)
- Install dash and connect to harness
- 2x seats to be reupholstered (repaired will be picked up tomorrow)
- Replace inverter (order submitted, part is local)
- Inspect bogies from Red unit. Replace hardware , journal box caps, brake pads, torque all fasteners , and replace fluids on the bogie set
- Repair/replace axle shaft
- Install bogies
- Test system repairs and organize transport

Thanks,  
**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: **s.15(1)(l)** ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)

---

**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Sent:** Wednesday, October 4, 2023 9:54 AM  
**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
**Subject:** RE: re: balance of growth work on the green locomotive

Hi Mandeep,

I saw that, and it was very helpful to know about the axle shaft.

However, that doesn't include a comprehensive list of the rest of the work.  
We'd like to know the complete scope of the growth work that has yet to be completed.

Thanks very much for your help.

**Rosemary Yip**

Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)  
Tel: 604-257-8465  
Cel: s.15(1)(l)  
Pron

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u0817\_wú7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

---

**From:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
**Sent:** Wednesday, October 4, 2023 9:50 AM  
**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
**Subject:** RE: re: balance of growth work on the green locomotive

Morning Rosemary,

Ozzie's already sent John an update for the green and carriages this morning.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**  
250 W 70th Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)

---

**From:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Sent:** Wednesday, October 4, 2023 9:47 AM  
**To:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
**Cc:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
**Subject:** re: balance of growth work on the green locomotive  
**Importance:** High

Hi Mandeep,

Can you please provide an update on the status of the green loco and a list of the remaining growth work for us today?

I've got a meeting later this afternoon with John to discuss.

Thanks very much.

**Rosemary Yip**

**Train Operations Team Lead**

**Vancouver Park Board City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wx\u817\_w\u00f7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

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From: "[Bevilacqua, Sergio](mailto:Sergio.Bevilacqua@vancouver.ca)" <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>  
To: "[Derek Puzzuoli](mailto:derek.puzzuoli@hedgehogtech.com)" <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
"[Shergill, Mandeep](mailto:Mandeep.Shergill@vancouver.ca)" <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
CC: "[Trevor Gauthier](mailto:trevor.gauthier@hedgehogtech.com)" <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>  
"[Gerhard Wilcke](mailto:gerhard.wilcke@hedgehogtech.com)" <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>  
"[Yip, Rosemary](mailto:rosemary.yip@vancouver.ca)" <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
"[Grimann, Carla](mailto:Carla.Grimann@vancouver.ca)" <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>  
"[Lepore, Ozzie](mailto:ozzie.lepore@vancouver.ca)" <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>  
"[Aramini, Joe](mailto:joe.aramini@vancouver.ca)" <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>  
"[Brodie, John](mailto:John.Brodie@vancouver.ca)" <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>  
"[Russell, Scott](mailto:scott.russell@vancouver.ca)" <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>

Date: 9/19/2023 2:45:06 PM

Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

---

Thanks Derek!

Couple questions for the carriages. Is there a specific procedure for the carriages? Will HH be inspecting the carriages with recommendations? Also for the bogie castings the recommendation is a corrosion inhibiting paint specified by Chance Rides or otherwise approved in writing by HH. Can we sandblast the castings and powder coat?

Thanks

Sergio Bevilacqua , RSE  
Acting Superintendent III  
Shops/Garage Operations  
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250 W 70<sup>th</sup> Ave Vancouver, BC, V5X 2X1  
Cell: s.15(1)(l) Office: 604.326.4721  
Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Tuesday, September 19, 2023 1:53 PM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Cc: Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>  
Subject: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

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Hi Mandeep,

Per our most recent discussions, please find the subject documents attached.

A few notes to explain the intended procedure for the locomotives-

- 1) Per FMS maintenance records, the bogies for A7737 (red locomotive) and A7739 (green locomotive) were fully rebuilt in 2017 and 2015, respectively.
- 2) In general, the major wear items (brakes, wheels, springs) from both bogies appear to have considerable service life left and we do not recommend a full rebuild for either bogie at this point.
- 3) However, since we need a good baseline, wear items should be inspected, tested, and repaired as necessary. This will require some disassembly, which is detailed in the checklists.
- 4) Per Chance's recommendations (Maintenance Manual pg 15), "*...any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled...*" - Since the work was done over 5 years ago, if we remove any fasteners from the bogies, they should be replaced at a minimum. While the minimum would be fine, we recommend replacing all fasteners, re-torquing, and torque striping as this would be much easier to keep track of now and going forward.
- 5) Correction on fastener grade: Chance basically specifies "Grade 5 or better". Since we're shorted fasteners for A7737 (as it wasn't planned when the parts order was placed with Chance), we have more leeway to use stock or locally sourced fasteners as long as they match in size and coatings, etc.
- 6) If the checklists are followed, the bogies for both units should have years of service left in them. Preventive inspection and maintenance will ensure this further and provide early indication of service requirements. This will be specified in the operational checklists HHT will deliver prior to opening.

As discussed, Trevor will be onsite this afternoon to review progress and talk to anyone there. Please let us know if you need any more info on these checklists. We'll be working closely with you on them and happy to make adjustments as needed.

Cheers,

**Derek Puzzuoli**

Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.

P: [s.22\(1\)](tel:6042221111) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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From: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
To: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
CC: "Aramini, Joe" <joe.aramini@vancouver.ca>  
"Augustine, Ray" <ray.augustine@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Brodie, John" <John.Brodie@vancouver.ca>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
"Grimann, Carla" <Carla.Grimann@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
"Moyle, Krista" <Krista.Moyle@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Russell, Scott" <scott.russell@vancouver.ca>  
"Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>

Date: 9/27/2023 1:28:26 PM

Subject: RE: Train Refurb Updates 2023/09/26

---

Hi Derek,

We'll make up temp. laminated tags for the assemblies outlining which unit front or back. We'll need your help with a more permanent solution there after.

Thanks,  
Mandeep S. Shergill, *ASCE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular **s.15(1)(l)** ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
Sent: Wednesday, September 27, 2023 1:03 PM  
To: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Cc: Aramini, Joe <joe.aramini@vancouver.ca>; Augustine, Ray <ray.augustine@vancouver.ca>; Bevilacqua, Sergio <Sergio.Bevilacqua@vancouver.ca>; Brodie, John <John.Brodie@vancouver.ca>; Gerhard Wilcke <gerhard.wilcke@hedgehogtech.com>; Goh, Bryan <Bryan.Goh@vancouver.ca>; Grimann, Carla <Carla.Grimann@vancouver.ca>; Jellema, Richard <richard.jellema@vancouver.ca>; Lepore, Ozzie <ozzie.lepore@vancouver.ca>; Moyle, Krista <Krista.Moyle@vancouver.ca>; Neale, Brian <Brian.Neale@vancouver.ca>; Russell, Scott <scott.russell@vancouver.ca>; Trevor Gauthier <trevor.gauthier@hedgehogtech.com>; Yip, Rosemary <rosemary.yip@vancouver.ca>  
Subject: Re: Train Refurb Updates 2023/09/26

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Hi Mandeep,

Can you confirm what's being done to track these frames as requested in my last update? Some type of marking to state which unit they came from would be ideal. Let me know if we can help here.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Wed, Sep 27, 2023 at 12:59 Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> wrote:

Hi Derek,

Another frame returned from being sand blasted and is ready for you to inspect.

Hi Scott,

Can we get an update when we will see the remaining parts for the bogie rebuilds? Two frames were dropped off for the body shop to be painted this morning. Without the remaining parts we will not be able to begin assembling soon.

Thanks,

**Mandeep S. Shergill, RSE Superintendent I**  
**City of Vancouver | Fleet and Manufacturing Services**  
**DayShift Manitoba Garage Operations**

250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1

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✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



**From:** Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>

**Sent:** Wednesday, September 27, 2023 12:24 PM

**To:** Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

**Cc:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Augustine,

Ray <[ray.augustine@vancouver.ca](mailto:ray.augustine@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Brodie, John

<[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan

<[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>;

Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista

<[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

**Subject:** RE: Train Refurb Updates 2023/09/26

Thank you Derek!

Sergio Bevilacqua , RSE  
Acting Superintendent III  
Shops/Garage Operations  
City of Vancouver | Fleet & Manufacturing Services  
250 W 70th Ave Vancouver, BC, V5X 2X1  
Cel: s.15(1)(l) Office: 604.326.4721  
Email: [Sergio.bevilacqua@vancouver.ca](mailto:Sergio.bevilacqua@vancouver.ca)



From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Tuesday, September 26, 2023 3:57 PM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Augustine, Ray <[ray.augustine@vancouver.ca](mailto:ray.augustine@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
Subject: Train Refurb Updates 2023/09/26

Hi all,

For today's update, we'll keep it short again. Please reach out if you have any specific questions.

- 1) Trevor was onsite today to review the sandblasted bogie castings. All but one piece are cleared for paint. See additional details below for further recommendations.
- 2) Unfortunately it seems we've lost track of exactly which bogies they are since the markings were on them and then sandblasted off. HHT is happy to help track these bogies going forward as we intend to serialize them in order to connect prior maintenance history if needed later. [@Trevor Gauthier](#) and [@Shergill, Mandeep](#) can you please work closely to keep track? It should be easy to re-identify the pieces since only 3 have been done and we know which units they came from at least.
- 3) For the one bogie casting piece that is not cleared for paint, it's exhibiting a casting defect that we're considering currently. We're convinced it's been like this since new as these defects are common in large cast parts of this vintage. However, it may be a good data point to have additional NDT performed in order to understand in better detail what's happening around the area and if we are to expect any further deterioration. I believe Trevor may have marked this piece, but if not please confirm with him which should be held back.
- 4) We'll obviously be sending bogie frames to the paint shop in batches, so this one we're holding back can go in a future batch if needed.
- 5) Because of findings like the above, we recommend proceeding with disassembly and sandblasting on every bogie as soon they become available. We're happy to help keep track since there will be a significant number of in-process parts around the garage and may become difficult to manage over multiple shifts.

More progress tomorrow...

Derek

On Fri, Sep 22, 2023 at 5:11 PM Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)> wrote:

Hi again all,

A shorter update for today as we head into the weekend.

- 1) We've confirmed that A7904 Beaver Lake and A7906 Brockton Point should be sent next. A7904 shows "no specific findings" in our condition assessment.
- 2) The following is a summary of the work orders matched to the HHT rework procedure and their current revision status. I'll keep this updated and notify of any changes going forward.

Unit #	WO	Status	HHT Procedure		
			Number	Revision	Status
A7737	231712	in process	23-003-WI001	2.0	
A7739	226131	in process	23-003-WI003	2.0	
A7901	226132	hold	23-003-WI005	1.0	
A7902	233959	decommissioned	n/a	n/a	
A7904	tbd	up next	23-003-WI008	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7905	234269	decommissioned	n/a	n/a	
A7906	226134	up next	23-003-WI010	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7907	226135	hold	23-003-WI011	1.0	
A7910	226136	in process	23-003-WI014	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)

Have a great weekend!

## Derek Puzzuoli

Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.

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On Thu, Sep 21, 2023 at 8:21 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Derek,

Thanks for the detailed findings from your site visit today. I just wanted to add a correction regarding the quantity of leaf springs on order.

We ordered 32 leaf springs for the two bogies from the decommissioned unit, Lumberman's Arch, before we made the larger order for the 5 carriages and 1 loco (192). The total number of leaf springs ordered is 224, which should be sufficient for 2 locos and 5 carriages.

Thanks,

Rosemary Yip

Train Operations Team Lead  
Vancouver Park Board City of Vancouver  
[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: [\(s.15\(1\)\(l\)\)](tel:s.15(1)(l))

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Na on, the x m k v m (Musqueam) s w w u s i 7 w i 7 mesh*

*(Squamish) and s lilw ta (Tseil-Waututh)*

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>  
Sent: Thursday, September 21, 2023 6:09 PM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Cc: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Augustine, Ray <[ray.augustine@vancouver.ca](mailto:ray.augustine@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>  
Subject: Train Refurb Updates 2023/09/21

Hi All,

I've opened a new thread for today's updates and left only the most recent / relevant details for the current status. I'll try to do this going forward to keep emails easier to read and file.

**Follow up to Richard's questions / concerns:**

- 1) The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this? HHT: Replacement castings are not available, so our plan is to seek approval or a rework procedure from our welding engineer. The info has been transmitted and we've asked for this item to be prioritized. We expect initial guidance shortly. We can mitigate this by installing the bogies from A7737 onto locomotive A7739 when it's ready. This should be resolved before A7737 needs them.
- 2) The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected. This will still require disassembling the bogies, is that the plan? HHT: This is an area where we're having to develop some better guidance as it is critical, yet poorly described by Chance. We're hoping this can be a partial disassembly rather than a full teardown. However, we'll rely on you to advise. Part of our scope of work is to inspect this and collect info to provide guidance for future operations and maintenance. It was highlighted in the TSBC inspection report which prevented the ride from opening, and was brought up to us again when we met with the inspector in at Manitoba Yard last month. We took a closer look today and the fore/aft clearance is visibly suspect on the bogies from A7737, so they will need to be inspected and adjusted either way. We're happy to be there in person while the work is happening to help clarify what we're after. We need to look at it closely as well.
- 3) Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083 HHT: They are now ready to ship at Chance, but didn't make the first shipment. They should come in the next shipment. Date TBD.
- 4) That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too. HHT: Unfortunately only enough leaf springs were ordered one of the locomotives to have them replaced. This is because the second locomotive was added to the scope after the order. It's possible Chance has more stock since they did have to manufacture a run of these parts for us.
- 5) And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order? HHT: The majority of the wheels appear to be within specification according to the Chance manual. The specification is primarily concerned with the thickness of the vertical flange as it is what retains the train on the track. There are some new spares in bench area near where A7902 is now if any of the wheels are found to be cracked, deformed, severely flat-spotted, etc.

**Status of A7902:**

- 1) A7902 was not originally recommended by HHT to be refurbished for Train 1 as it has a highly modified

frame and bogie.

2) It was suggested for A7902 to be sent with A7739 as an example of one of the "worst" units for material identification and welding engineering review. We thought this was a good idea to see if there's a variance between materials used and repair quality across the units. Since we have spare bogies from Lumberman's Arch, the modified bogie (which is beyond repair) could be replaced, leaving only the frame modifications to address.

3) Today, as we have it up on stands with the frame nearly at eye level, we can clearly see sagging in the frame on either end. The ends of the frame do not appear to be significantly loaded, so we immediately suspected permanent deformation.

4) Our measurements confirmed the sagging. We can clean up the data and share the measurement for anyone interested.

5) The modifications to the frame appear to have caused this deformation. To describe the modification, the frame stiffeners around the bogie mounts were notched out down to about half of their original height and then a new "flange" was added to them in an attempt to regain the original stiffness. The problem here is that the new height of the stiffener leaves little to no access to properly weld on the flange. See the image from our assessment report below.

6) This would have resulted in a significant decrease in strength even if it was possible to properly weld the flange. The deformation may be additional proof that it's not properly welded.

7) Repairing this will cause a significant delay and may come very close to the cost of a new frame as the frame would need to be straightened, have most of the stiffeners replaced, and then fully repainted. The frame shows several areas of significant corrosion that would also need to be addressed in this process. Therefore recommend decommissioning this unit and focusing on those in better condition.

8) We suspect this modification may have been originally made to accommodate the modifications to the bogie which has been made slightly taller in this area.

Regards,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.*

*Hedgehog Technologies Inc.*

P: **s.22(1)** E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

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We make complex visions a practical reality.

On Thu, Sep 21, 2023 at 2:02\u8239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

I have to wait for Carla, who is back in tomorrow, before we can decide where to put them. She's been working on finding storage, so let's see if her enquiries have borne fruit.

I would say let's bring them back here, but with no bogies on them, we can't move them into the barn or tunnel. And we can't just drop them into the paddock because that will impede the setup for Bright Nights.

Let's see what we can do.

Thanks,

Rosemary

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)> City of Vancouver - FOI 2023-725 - Page 220 of 270

Sent: Thursday, September 21, 2023 1:53 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>;

Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>;

Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian

<[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier

<[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Grimann, Carla

<[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Jellema,

Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi Rosemary,

We're at capacity at the shop for train space, happy to help where possibly. We'll need the two units (Lions gate /Lumberman's arch)that have been marked for decommissioning moved from FMS first to make room for the next 2 carriages. Let me know when the second carriage has been decided so we can move both to Manitoba at the same time. Where would you like the decommissioned units dropped off? You'll need to setup dunnage as the bogies have been removed for rebuilds.

Thanks,

Mandeep S. Shergill, RSE Superintendent I

City of Vancouver | Fleet and Manufacturing Services

DayShift Manitoba Garage Operations

250 W 70th Avenue | Vancouver BC, V5X 2X1

• Cellular: [s.15\(1\)\(\)](tel:s.15(1)()) | • Office: 604.326.4770

• [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)<mailto:[mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)>>

[CoV-EngineeringServices[1]]

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)<mailto:[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>>

Sent: Thursday, September 21, 2023 10:42 AM

To: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>>

Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)<mailto:[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>>

Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)<mailto:[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>>

Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)<mailto:[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>>

Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)<mailto:[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>>

Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)<mailto:[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>>

Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)<mailto:[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>>

Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)<mailto:[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>>

Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)<mailto:[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>>

Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)<mailto:[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>>

Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)<mailto:[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>>

Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)<mailto:[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>>

Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)<mailto:[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>>

Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Importance: High

Hi Derek,

A7901 can be ready to go as soon as Fleet arranges for the crane truck and can let us know when we can transport.

And if there's any possibility of taking a second carriage along with 7901, we'd love to take advantage of this opportunity to send another unit over as we're still searching for so where to store the units in advance of the tree work commencing on the 3rd.

Thank you,  
Rosemary

From: Derek Puzzuoli  
<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>>>  
Sent: Thursday, September 21, 2023 10:34 AM  
To: Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>>>  
Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)<mailto:[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>>>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)<mailto:[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>>>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)<mailto:[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>>>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)<mailto:[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>>>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)<mailto:[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>>>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)<mailto:[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>>>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)<mailto:[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>>>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)<mailto:[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>>>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)<mailto:[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>>>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)<mailto:[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>>>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)<mailto:[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>>>  
Subject: Re: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi all, We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend

Hi all,

We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend prepping it for transport immediately and standing by for confirmation of our findings.

Cheers,

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Thu, Sep 21, 2023 at 09:24 Derek Puzzuoli  
<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>>> wrote:  
Correction- I will arrive closer to 10 now.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies



s.22(1)

On Thu, Sep 21, 2023 at 07:57 Derek Puzzuoli  
<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>> wrote:  
Hi Richard,

Thanks for your questions. I'll be visiting this morning to review / discuss. ETA 915-930.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Wed, Sep 20, 2023 at 18:37 Jellema, Richard  
<[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>> wrote:  
After disassembly of the first two train bogies and the news that we are not rebuilding the drive bogies, I have a few questions and concerns.

- > The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this?
- > The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected. This will still require disassembling the bogies, is that the plan?
- > Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083
- > That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too.
- > And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order?

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attachments, and any copies thereof from your system.

From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
 To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
 CC: "Michael Wrinch" <mike@hedgehogtech.com>  
 Date: 9/8/2023 3:22:42 PM  
 Subject: Re: Update re: recommissioning status for leadership

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Hi Rosemary,

It is too early to be definitive, but if parts arrive by the end of next week as we're currently expecting, then there is reason for optimism. I plan to provide a more detailed project update shortly, but I've summarized the current status of the repairs of all units below. Please take the following as DRAFT intended to communicate my thoughts. We can discuss in closer detail when I can present the Gantt chart. If you have some time Monday afternoon, it should be ready then.

Unit	Start	Finish (earliest feasible)	Status	
Carriage A7905 Lumberman's Arch	-	-	Decomissioned	Bogies to be overhauled and
Locomotive A7739 (Green)	2023.06.12	2023.09.28	Repairs in process	Awaiting welding engineer rep
Carriage A7902 Lion's Gate	2023.06.12	2023.09.29	Repairs in process	Ready to commence work
Locomotive A7737 (Red)	2023.08.23	2023.09.29	Repairs in process	Pending revisions to repair in
Carriage A7910 Unnamed (Siwash Rock)	2023.08.23	2023.09.29	Repairs in process	Proceed with repairs, use bog delayed
BOGIE REBUILD 1 - A7902, A7905 (for spares), A7910	2023.09.15	2023.09.25	Awaiting parts	Bogie rebuilds to be performe
Carriage A7904 Beaver Lake	2023.09.29	2023.10.18	@ SPR	
Carriage A7906 Brockton Point	2023.09.29	2023.10.18	@ SPR	
Carriage A7907 Ferguson Point	2023.09.29	2023.10.18	@ SPR	
Carriage A7901 Hallelujah Point	2023.09.29	2023.10.18	@ SPR	
BOGIE REBUILD 2 - A7904, A7906, A7907, A7901	2023.10.03	2023.10.11	@ SPR	

Note that this schedule considers the end of September as key timing to return current in-process units to SPR and receive the remaining ones. There are several risks. Currently, the arrival of parts from Chance is the greatest of the risks as it affects nearly every unit. The weld repair sign off, specifically on the rear bogie on the green locomotive may cause a delay to that unit. The timing of the upcoming work over the track is also critical unless we can liberate some temporary storage space.

I hope this helps. Have a great weekend!

Cheers,

**Derek Puzzuoli**

Lead Mechanical Engineer, P.Eng.  
 Hedgehog Technologies Inc.

P: s.22(1) | E: derek.puzzuoli@hedgehogtech.com |  
 20 Road, Burnaby, BC, V5M 3Z3, Canada

[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]



We make complex visions a practical reality.

On Thu, Sep 7, 2023 at 10:56\u00a0AM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Good morning,

A bit of an update... Senior leadership would like to schedule a donor acknowledgement event that would coincide with an event announcement (about Bright Nights).

To that end, John has asked:

@Rose: Can you connect with Hedgehog to let them know that we are looking for a definitive time when we can communicate that the train will be online? It's probably too early to provide a date at this point, but at least defining what needs to be done for us to give the thumbs-up would be helpful. I anticipate we'll need to provide an update to the Mayor's office and City Manager's Office on the status of the project, so a status update from them as part of their PM work would be helpful.

I can give you a call later today to chat about this and other updates at our end.

Thanks,

**Rosemary Yip**

**Train Operations Team Lead**

**Vancouver Park Board | City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the xʷməθkʷəy̅əm (Musqueam), s̓k̓w̓x̓w̓ú7mesh (Squamish) and səliłwətał (Tsleil-Waututh)*

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**From:** "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
**To:** "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
**CC:** "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
**Date:** 12/6/2023 12:40:46 PM  
**Subject:** Re: updates

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[@Trevor Gauthier](#)

Rosemary and I discussed this and we'll need to update the corresponding refurb procedure to include the installation of the accessibility kit. I'll leave it upto you to advise as to whether it should be installed on A7901 or A7907, but if we can issue a new rev by Monday when Mandeep is back, that should work.

Cheers,

**Derek**

On Fri, Nov 17, 2023 at 3:37\u00239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

FYI

Rosemary Yip  
Train Operations Team Lead  
Cel: s.15(1)(l)

---

**From:** Yip, Rosemary  
**Sent:** Friday, November 17, 2023 2:58:01 PM  
**To:** Traviss, Rob <[rob.traviss@vancouver.ca](mailto:rob.traviss@vancouver.ca)>  
**Cc:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>  
**Subject:** RE: updates

Hi Rob,

Thanks for the update.

Ozzie might have already mentioned it today, but want to let you know that the accessibility kit will be arriving at Man Yd next week, on Wednesday according to Procurement.

We need to get it installed on either A7901 or A7907, whichever makes the most sense.

Our hope is to have both of those carriages back on Monday November 27, for the final inspection.

We are happy to approve OT for the carriages, so if there's any chance of scheduling OT for the bogie work this weekend, that would be my priority. I know Richard is doing the heavy lifting on the

bogie rebuilds, so will leave that with you to determine feasibility.

Thanks,

**Rosemary Yip**

**Train Operations Team Lead**

**Vancouver Park Board City of Vancouver**

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x m k y m (Musqueam), s wxwú7mesh (Squamish) and s lilw ta (Tsleil-Waututh)*

---

**From:** Traviss, Rob <[rob.traviss@vancouver.ca](mailto:rob.traviss@vancouver.ca)>  
**Sent:** Friday, November 17, 2023 1:41 PM  
**To:** Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
**Cc:** Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>  
**Subject:** updates  
**Importance:** High

Afternoon Rosemary,

Here is an update on the SPT for this week. Two carriages delivered on Wednesday, three now complete. Crews will be working on rebuilding the remaining bogies and working on the red train this weekend.

Red Train repairs in progress (no timeline yet)

Engine and transmission complete ready for install

Building new wiring Harness

Install all new airlines and fuel lines

Install new exhaust fabrication work needed

Install rebuilt gear box

Mount new switches and gauges fabrication work needed

Install new Alternator

Install grip tape on the floor

Rebuild bogie assemblies from Blue Train A7738. One good assembly from Blue Train to be used on Red Train and one good assembly from Green Train to be used on Red train. Both bogies to be disassembled, cleaned, prepped for sand blasting and inspection. They will be painted, rebuilt to put on the Red Train as per Hedgehog.

### **Train Cart A7901**

- Flooring to get rust removed and painted **Monday** by Fab Shop
- Waiting for one bogie assembly from Machine Shop, one assembly ready to be installed.
- **Cart should be ready by end of next week**

### **Train Cart A7907**

- Floor to get rust removed and painted by Fab Shop
- Waiting for rebuilt bogie assemblies from Machine Shop.
- Cart In progress, waiting for bogies

## Train Cart A7908

- Dropped off Wednesday for new bogies and cart work.
- No Timeline yet

Thanks,

Rob Traviss , RSE

City of Vancouver | Superintendent I (A) | Fleet and Manufacturing Services

250 W 70<sup>th</sup> Ave | Vancouver, BC, V5X 2X1

( Cellular s.15(1)(l) | ( Office: 604-326-4770

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From: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
Date: 9/29/2023 9:24:07 AM  
Subject: RE: Weekend Overtime Request Approval Saturday Sept.30th

---

Thanks Rosemary!

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



---

From: Yip, Rosemary <rosemary.yip@vancouver.ca>  
Sent: Friday, September 29, 2023 9:23 AM  
To: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Subject: Re: Weekend Overtime Request Approval Saturday Sept.30th

Hi Mandeep  
Please use the order number as provided in my earlier reply.  
Thank you!

Rosemary Yip  
Train Operations Team Lead  
Cel: s.15(1)(l)

---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Friday, September 29, 2023 8:34:11 AM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Subject: Re: Weekend Overtime Request Approval Saturday Sept.30th

Actually it might be Carla's order number for the project. Let me check first and I'll let you know!

Rosemary Yip  
Train Operations Team Lead  
Cel: s.15(1)(l)

---

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Sent: Friday, September 29, 2023 8:32:44 AM  
To: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Subject: Re: Weekend Overtime Request Approval Saturday Sept.30th

Hi Mandeep ,  
Yes, please schedule the weekend work.  
Please use the order number for the project.40042810.  
Thank you!

Rosemary Yip  
Train Operations Team Lead  
Cel: s.15(1)(l)

---

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>  
Sent: Friday, September 29, 2023 8:18:28 AM  
To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>  
Subject: Weekend Overtime Request Approval Saturday Sept.30th

Hi Rosemary,

The green unit is coming long and do require an weekend OT shift to keep it going moment going. I need to bring in Gurmukh for Saturday Sept. 30 for 10 hours so the following work can be completed :

Complete the installation of the wiring harness inside the frame  
Install the inverter  
Mount Battery Charger  
Dry Fit driveline

Hoping the remainder of the parts arrive next week we should be able to wrap up the upper structure by end of week Friday (red train bogies require a bit more work than anticipated) Will speak to the machine on a completion time Monday. Being a statutory holiday this week and next its tough to have staff come in. I'm anticipating to bring a bigger crew in next weekend and would like to give them a bit of time to plan for it. They would be working on the various bogies rebuild currently in the shop and focusing on the red train. Saturday and Sunday 10 hours 3-4 (staff dependant on key staff availability).

Let me know if this Saturday is a go I do require a cost number to charge out the time , we can chat further about the progress mid next week and plan for the upcoming weekend then.

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular: s.15(1)(l) ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
To: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
CC: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Olderskog, Timothy" <Timothy.Olderskog@vancouver.ca>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
Date: 9/22/2023 1:28:03 PM  
Subject: RE: Work orders vs unit numbers

Hi Derek ,

Here's the current work orders we have setup for the trains within our system. Once A7904 arrives a new order will be created.

A7905	234269
A7737	231712
A7739	226131
A7901	226132
A7906	226134
A7907	226135
A7910	226136
A7902	233959

Thanks,  
**Mandeep S. Shergill, RSE Superintendent I**  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
Cellular s.15(1)(l) | Office: 604.326.4770  
✉ [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: Derek Puzzuoli <derek.puzzuoli@hedgehogtech.com>  
Sent: Friday, September 22, 2023 7:27 AM  
To: Shergill, Mandeep <Mandeep.Shergill@vancouver.ca>  
Cc: Yip, Rosemary <rosemary.yip@vancouver.ca>  
Subject: Work orders vs unit numbers

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Hi Mandeep,

Due to the ongoing changes in work details, it's become apparent to me that we (HHT) need to list out all of the repair checklists we've delivered and clarify which revs are current and where changes may be coming. With this, it would also be helpful for us to match your work order numbers to our procedures for clear communication. I intend to provide an excerpt from our internal document register that details this. Can you send me your list of WO's with the unit numbers so I can match them up. I intend to communicate this list to the full team in an upcoming update, Monday latest.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies  
s.22(1)

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From: ["Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>](mailto:derek.puzzuoli@hedgehogtech.com)  
To: ["Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>](mailto:Mandeep.Shergill@vancouver.ca)  
CC: ["Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>](mailto:trevor.gauthier@hedgehogtech.com)  
["Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>](mailto:gerhard.wilcke@hedgehogtech.com)  
["Yip, Rosemary" <rosemary.yip@vancouver.ca>](mailto:rosemary.yip@vancouver.ca)  
["Grimann, Carla" <Carla.Grimann@vancouver.ca>](mailto:Carla.Grimann@vancouver.ca)  
["Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>](mailto:Sergio.Bevilacqua@vancouver.ca)  
["Lepore, Ozzie" <ozzie.lepore@vancouver.ca>](mailto:ozzie.lepore@vancouver.ca)  
["Aramini, Joe" <joe.aramini@vancouver.ca>](mailto:joe.aramini@vancouver.ca)  
["Brodie, John" <John.Brodie@vancouver.ca>](mailto:John.Brodie@vancouver.ca)  
["Russell, Scott" <scott.russell@vancouver.ca>](mailto:scott.russell@vancouver.ca)

Date: 9/19/2023 2:02:02 PM

Subject: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Attachments: 23-003-WI001-Refurbishing procedure-A7737\_rev2.0\_DRAFT.pdf  
23-003-WI003-Refurbishing procedure-A7739\_rev2.0\_DRAFT.pdf  
23-003-WI018-Refurbishing procedure-Carriage Bogies\_Train1\_rev1.0.pdf

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Hi Mandeep,

Per our most recent discussions, please find the subject documents attached.

A few notes to explain the intended procedure for the locomotives-

1) Per FMS maintenance records, the bogies for A7737 (red locomotive) and A7739 (green locomotive) were fully rebuilt in 2017 and 2015, respectively.

2) In general, the major wear items (brakes, wheels, springs) from both bogies appear to have considerable service life left and we do not recommend a full rebuild for either bogie at this point.

3) However, since we need a good baseline, wear items should be inspected, tested, and repaired as necessary. This will require some disassembly, which is detailed in the checklists.

4) Per Chance's recommendations (Maintenance Manual pg 15), *"...any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled..."* - Since the work was done over 5 years ago, if we remove any fasteners from the bogies, they should be replaced at a minimum. While the minimum would be fine, we recommend replacing all fasteners, re-torquing, and torque striping as this would be much easier to keep track of now and going forward.

5) Correction on fastener grade: Chance basically specifies "Grade 5 or better". Since we're shorted fasteners for A7737 (as it wasn't planned when the parts order was placed with Chance), we have more leeway to use stock or locally sourced fasteners as long as they match in size and coatings, etc.

6) If the checklists are followed, the bogies for both units should have years of service left in them. Preventive inspection and maintenance will ensure this further and provide early indication of service requirements. This will be specified in the operational checklists HHT will deliver prior to opening.

As discussed, Trevor will be onsite this afternoon to review progress and talk to anyone there. Please let us know if you need any more info on these checklists. We'll be working closely with you on them and happy to make adjustments as needed.

Cheers,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: s.22(1) | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |  
206 Road, Burnaby, BC, V5M 3Z3, Canada

[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]



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**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
7. See ride manufacturer's manual for part callout references
8. Mandatory replacements can be considered optional replacements if the unit is in good working order. However, these items still require an in-situ inspection for any damage, wear or corrosion. Additionally, as per the Maintenance Manual pg 15 (ChanceTrainManualPt1 PDF pg 47), any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled and any capscrews and locknuts which are regularly disassembled during operation (for portability, regular maintenance / checks, etc.) must be replaced each operating season.

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Disassemble	1	Disconnect bogie air lines		n/a	n/a			
	2	Disconnect drive shaft from bogie gearbox and main gearbox; remove drive shaft	perform 2x (front and rear bogies)	n/a	n/a			
	3	Lift/support yoke axle		n/a	n/a			
	4	Disconnect and remove false drive wheels		n/a	n/a			
	5	Strap false wheel drive arm to frame or remove		n/a	n/a			
	6	Unbolt yoke axle from radius rods and remove		n/a	n/a			
	7	Unbolt and remove radius rods		n/a	n/a			
	8	Remove frame hooks	2 per bogie = 4 total	n/a	n/a			
	9	Lift frame off bogies		n/a	n/a			
	10	Disconnect brake link straps from inside brake levers	perform all steps from here onwards on both front and rear bogies	n/a	n/a			
	11	Disconnect drive shaft running through bogie frame from both gearboxes		n/a	n/a			
	12	Remove journal box support bars		n/a	n/a			
	13	Lift bogie off of Wheel-Axle-Gearbox assemblies		n/a	n/a			
	14	Remove drive shaft running through bogie frame		n/a	n/a			
	15	Lift/add support under bolster support channel		n/a	n/a			
	16	Unpin hangers		n/a	n/a			
	17	Unbolt safety hangers		n/a	n/a			
	18	Lift bogie frame off of bolster assembly		n/a	n/a			

**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
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8. Mandatory replacements can be considered optional replacements if the unit is in good working order. However, these items still require an in-situ inspection for any damage, wear or corrosion. Additionally, as per the Maintenance Manual pg 15 (ChanceTrainManualPt1 PDF pg 47), any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled and any capscrews and locknuts which are regularly disassembled during operation (for portability, regular maintenance / checks, etc.) must be replaced each operating season.

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Inspect / Salvage / Recondition	19	Replace rod ends and nuts on radius rods		5-7, 5-8	n/a			
	20	Inspect air lines and replace as necessary		n/a	n/a			
	21	Clean and inspect brake shoes and replace as necessary		16-73, 16-74, 16-78, 16-79	16-77			
	22	Clean and inspect wheels for wear/damage and replace as necessary		n/a				
	23	Clean and inspect axles for wear / damage / deformation and notify HHT of any findings before proceeding	Thoroughly clean and inspect visually for surface cracks	n/a	n/a			
	24	Open journal boxes, clean and inspect parts, inspect journal box components for damage and replace as necessary		16-40, 16-43	16-31 to 16-39, 16-41, 16-42, 16-44			
Re-Assemble	25	Replace all capscrews, locknuts, pins, etc on braking system; clean and inspect parts for damage and replace as necessary. Ensure brake surfaces are free from oil, grease or other contaminants. Torque all fasteners.	torque specs listed on page 13 of the maintenance manual (revised April 2012)	16-51 to 16-53, 16-58, 16-59, 16-62 to 16-65, 16-67, 16-70, 16-71 to 16-74, 16-81, 16-86	16-50, 16-54 to 16-57, 16-60, 16-61, 16-66, 16-68, 16-69, 16-75, 16-76, 16-80, 16-82 to 16-85, 16-88 to 16-91			
	26	Replace all hardware and bearings on false drive wheels as required	Spacers 5-13/5-14/5-15 are used as required	5-9, 5-10, 5-11, 5-12, 5-13, 5-14, 5-15, 5-16, 5-17, 5-19, 5-20, 5-28				
	27	Replace all capscrews, locknuts, pins, wear components, etc as needed and reassemble bogie; torque all fasteners and re-assemble bogie and train by reversing steps 1-18	torque specs listed on page 13 of the maintenance manual (revised April 2012)	16-8, 16-11, 16-12, 16-14, 16-16, 16-19, 16-22, 16-24, 16-47, 16-49	16-4 to 16-7, 16-9, 16-13, 16-15, 16-17, 16-18, 16-20, 16-21, 16-23, 16-45, 16-46, 16-48			





**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
7. See ride manufacturer's manual for part callout references
8. Mandatory replacements can be considered optional replacements if the unit is in good working order. However, these items still require an in-situ inspection for any damage, wear or corrosion. Additionally, as per the Maintenance Manual pg 15 (ChanceTrainManualPt1 PDF pg 47), any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled and any capscrews and locknuts which are regularly disassembled during operation (for portability, regular maintenance / checks, etc.) must be replaced each operating season.

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Adjust	28	Adjust journal box wear plate spacing	Dimensional limits to be determined from empirical data. HHT Engineer to be present for adjustment and data collection.	n/a	n/a			
	29	Grease all zerk fittings and lubricate any other required areas	Per Lubrication Chart on page 25 of 1965 manual.	n/a	n/a			
	30	Adjust braking system	Manual specifies "as close as possible without dragging". Record brake shoe gap tolerances for future inspections.	n/a	n/a			
	31	Test braking system	Air test procedure: 1) Pressurize airlines to 40 psi and verify brake system function. Ensure all brake cylinders fully extend when pressurized and fully retract when depressurized. Repair and readjust as necessary. 2) Pressurize airlines to 90psi and hold for 5 minutes while observing and recording any leaks. Repair and readjust as necessary.	n/a	n/a			
Anytime	32	Replace hitch bars and splice bars						
	33	Safety decals						
	34	Safety chains						



**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
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Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Disassemble	1	Disconnect bogie air lines		n/a	n/a			
	2	Disconnect drive shaft from bogie gearbox and main gearbox; remove drive shaft	perform 2x (front and rear bogies)	n/a	n/a			
	3	Lift/support yoke axle		n/a	n/a			
	4	Disconnect and remove false drive wheels		n/a	n/a			
	5	Strap false wheel drive arm to frame or remove		n/a	n/a			
	6	Unbolt yoke axle from radius rods and remove		n/a	n/a			
	7	Unbolt and remove radius rods		n/a	n/a			
	8	Remove frame hooks	2 per bogie = 4 total	n/a	n/a			
	9	Lift frame off bogies		n/a	n/a			
	10	Disconnect brake link straps from inside brake levers	perform all steps from here onwards on both front and rear bogies	n/a	n/a			
	11	Disconnect drive shaft running through bogie frame from both gearboxes		n/a	n/a			
	12	Remove journal box support bars		n/a	n/a			
	13	Lift bogie off of Wheel-Axle-Gearbox assemblies		n/a	n/a			
	14	Remove drive shaft running through bogie frame		n/a	n/a			
	15	Lift/add support under bolster support channel		n/a	n/a			
	16	Unpin hangers		n/a	n/a			
	17	Unbolt safety hangers		n/a	n/a			
	18	Lift bogie frame off of bolster assembly		n/a	n/a			

**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
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Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Inspect / Salvage / Recondition	19	Replace rod ends and nuts on radius rods		5-7, 5-8	n/a			
	20	Inspect air lines and replace as necessary		n/a	n/a			
	21	Clean and inspect brake shoes and replace as necessary		16-73, 16-74, 16-78, 16-79	16-77			
	22	Clean and inspect wheels for wear/damage and replace as necessary		n/a				
	23	Clean and inspect axles for wear / damage / deformation and notify HHT of any findings before proceeding	Thoroughly clean and inspect visually for surface cracks	n/a	n/a			
	24	Open journal boxes, clean and inspect parts, inspect journal box components for damage and replace as necessary		16-40, 16-43	16-31 to 16-39, 16-41, 16-42, 16-44			
Re-Assemble	25	Replace all capscrews, locknuts, pins, etc on braking system; clean and inspect parts for damage and replace as necessary. Ensure brake surfaces are free from oil, grease or other contaminants. Torque all fasteners.	torque specs listed on page 13 of the maintenance manual (revised April 2012)	16-51 to 16-53, 16-58, 16-59, 16-62 to 16-65, 16-67, 16-70, 16-71 to 16-74, 16-81, 16-86	16-50, 16-54 to 16-57, 16-60, 16-61, 16-66, 16-68, 16-69, 16-75, 16-76, 16-80, 16-82 to 16-85, 16-88 to 16-91			
	26	Replace all hardware and bearings on false drive wheels as required	Spacers 5-13/5-14/5-15 are used as required	5-9, 5-10, 5-11, 5-12, 5-13, 5-14, 5-15, 5-16, 5-17, 5-19, 5-20, 5-28				
	27	Replace all capscrews, locknuts, pins, wear components, etc as needed and reassemble bogie; torque all fasteners and re-assemble bogie and train by reversing steps 1-18	torque specs listed on page 13 of the maintenance manual (revised April 2012)	16-8, 16-11, 16-12, 16-14, 16-16, 16-19, 16-22, 16-24, 16-47, 16-49	16-4 to 16-7, 16-9, 16-13, 16-15, 16-17, 16-18, 16-20, 16-21, 16-23, 16-45, 16-46, 16-48			



**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
7. See ride manufacturer's manual for part callout references
8. Mandatory replacements can be considered optional replacements if the unit is in good working order. However, these items still require an in-situ inspection for any damage, wear or corrosion. Additionally, as per the Maintenance Manual pg 15 (ChanceTrainManualPt1 PDF pg 47), any permanently installed capscrews and locknuts that have been in service for over 5 years must be replaced any time they are disassembled and any capscrews and locknuts which are regularly disassembled during operation (for portability, regular maintenance / checks, etc.) must be replaced each operating season.

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Adjust	28	Adjust journal box wear plate spacing	Dimensional limits to be determined from empirical data. HHT Engineer to be present for adjustment and data collection.	n/a	n/a			
	29	Grease all zerk fittings and lubricate any other required areas	Per Lubrication Chart on page 25 of 1965 manual.	n/a	n/a			
	30	Adjust braking system	Manual specifies "as close as possible without dragging". Record brake shoe gap tolerances for future inspections.	n/a	n/a			
	31	Test braking system	Air test procedure: 1) Pressurize airlines to 40 psi and verify brake system function. Ensure all brake cylinders fully extend when pressurized and fully retract when depressurized. Repair and readjust as necessary. 2) Pressurize airlines to 90psi and hold for 5 minutes while observing and recording any leaks. Repair and readjust as necessary.	n/a	n/a			
Anytime	32	Replace hitch bars and splice bars						
	33	Safety decals						
	34	Safety chains						



Bogie ID / SN: \_\_\_\_\_

**Project:** 23-003 Stanley Park Train  
**Document:** Refurbishing Checklist - Carriage Bogies (Train 1)  
**Revision:** 1.0  
**Release Date:** 2023-09-19

**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
7. See ride manufacturer's manual for part callout references

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Disassemble	1	Disconnect brake link straps from inside brake levers		n/a	n/a			
	2	Remove journal box support bars	Take caution of any force in the compression springs.	n/a	n/a			
	3	Lift/add support under bolster support channel and secure wheels / axles from rolling		n/a	n/a			
	4	Unpin hangers		n/a	n/a			
	5	Unbolt safety hangers		n/a	n/a			
	6	Lift bogie frame off of bolster assembly and s axle assemblies	Take caution of any force in the compression and leaf springs.	n/a	n/a			
	7	Remove all remaining subsystems from bogie structure	Structural castings should be completely bare and ready for cleaning and reconditioning.	n/a	n/a			
Inspect / Salvage / Recondition	8	Clean and inspect all major cast parts	Notify HHT engineering of any damage or repairs not noted in HHT condition assessment report 23-003-R002.	n/a	n/a			
	9	Re-coat all re-useable cast parts	Black corrosion-inhibiting paint (Unless otherwise specified by Chance Rides or approved in writing by HHT).	n/a	n/a			
	10	Clean and inspect all hangers and linkages for excessive wear, deformation, cracks, and any other damage	Salvage all useable components and set aside for potential use in future rebuilds. Do not re-assemble to bogie.	n/a	n/a			
	11	Clean and inspect wheels for excessive wear, deformation, cracks, and any other damage	Salvage all useable components and set aside for potential use in future rebuilds. Do not re-assemble to bogie.	n/a	n/a			
	12	Clean and inspect all axles for excessive wear, deformation, cracks, and any other damage	Thoroughly clean and inspect visually for surface cracks. Salvage all useable components and set aside for potential use in future rebuilds. Do not re-assemble to bogie.	n/a	n/a			
	13	Re-coat all re-useable axles	Black corrosion-inhibiting paint (Unless otherwise specified by Chance Rides or approved in writing by HHT).	n/a	n/a			
	14	Open journal boxes, clean and inspect parts for excessive wear, deformation, cracks, and any other damage	Salvage all useable components and set aside for potential use in future rebuilds. Do not re-assemble to bogie.	n/a	n/a			



Bogie ID / SN: \_\_\_\_\_

**Project:** 23-003 Stanley Park Train  
**Document:** Refurbishing Checklist - Carriage Bogies (Train 1)  
**Revision:** 1.0  
**Release Date:** 2023-09-19

**General Notes:**

1. Inspect all parts through the disassembly for corrosion. Remove any corrosion build up and treat cleaned bare metal surfaces with a corrosion inhibitor such as Fluid Film, CRC SP-350 or equivalent. Recoat previously painted surfaces as necessary.
2. Inspect all holes for signs of wear or elongation. Replace any damaged parts.
3. Use Loctite 243 on all blind holes and on all regular nuts that do not have a retention feature (such as a castle nut with pin or a nylon-insert lock nut).
4. Torque all fasteners with a calibrated torque wrench to the value specified on page 13 of the maintenance manual (revised April 2012).
5. Apply torque striping to all fully torqued fasteners to allow for visual in-service inspection. Consult HHT for torque striping process if necessary.
6. Ensure fasteners are the grade specified in manufacturer documentation.
7. See ride manufacturer's manual for part callout references

Stage	Step	Description	Details / References	Replacement Parts		Completed		Notes / Comments
				Mandatory	As Required	Date	By	
Re-Assemble	15	Reassemble wheel-axle-journal box subassembly using new wheels and journal box components	Re-use axle shafts from disassembled bogies.	16-31 to 16-44	n/a			
	16	Reassemble brake system using all new components from kit bin. Torque all fasteners.	Ensure braking surfaces are free from oil, grease or other contaminants. Torque specs listed on page 13 of the maintenance manual (revised April 2012).	16-50 to 16-86, 16-88 to 16-91	n/a			
	17	Replace all hardware, pins, springs, hangers, wear components, etc and reassemble bogie; torque all fasteners and re-assemble bogie by reversing steps 1-7	Torque specs listed on page 13 of the maintenance manual (revised April 2012).	16-4 to 16-24, 16-46 to 16-49	n/a			
Adjust	18	Adjust journal box wear plate spacing	Dimensional limits to be determined from empirical data. HHT Engineer to be present for adjustment and data collection.	n/a	n/a			
	19	Grease all zerk fittings and lubricate any other required areas	Per Lubrication Chart on page 25 of 1965 manual.	n/a	n/a			
	20	Adjust braking system	Manual specifies "as close as possible without dragging". Record brake shoe gap tolerances for future inspections.	n/a	n/a			
	21	Test braking system	Air test procedure: 1) Pressurize airlines to 40 psi and verify brake system function. Ensure all brake cylinders fully extend when pressurized and fully retract when depressurized. Repair and readjust as necessary. 2) Pressurize airlines to 90psi and hold for 5 minutes while observing and recording any leaks. Repair and readjust as necessary.	n/a	n/a			

From: "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
To: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>  
"Moyle, Krista" <Krista.Moyle@vancouver.ca>  
CC: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
"Yip, Rosemary" <rosemary.yip@vancouver.ca>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
Date: 11/10/2023 2:27:29 PM  
Subject: Torque striping  
Attachments: 23-003-WI022 Torque Striping\_rev1.pdf

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Hi Everyone,

We have formalized a torque striping procedure to help ensure clarity and consistency on torque stripes moving forward. The attached document outlines both the application and inspection of torque stripes, along with some background information.

Let us know if you have any questions,

Thanks,

**TREVOR GAUTHIER**  
MECHANICAL ENGINEER, EIT




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	<b>Stanley Park Miniature Railway</b>	
	<b>Torque Striping Application and Inspection</b>	
	Document Number: <b>23-003-WI022</b>	Revision: <b>1.0</b>
<b>Revision Description:</b>	Initial Release	
<b>Authored:</b>	Name: Trevor Gauthier	Date: 2023/11/06
<b>Reviewed:</b>	Name: Derek Puzzuoli	Date: 2023/11/06

## Problem / Intro

Locomotive and carriage fasteners must maintain a specified preload to be effective. Forces and vibrations experienced during operation can loosen fasteners over time and decrease performance or present a hazard. Therefore, all fastened connections should be inspected on a regular basis. Given the number of fasteners present on the ride system, a simple and effective inspection method is required.

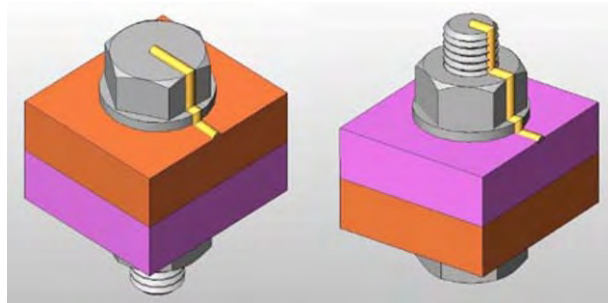
## Solution / Recommendation

Torque Striping can serve multiple purposes simultaneously and is a common solution in both the amusement ride and rail industries. Proper torque striping is primarily used as a fastener loosening indicator that enables visual inspection and detection of any fasteners that are no longer at their specified torque. Torque striping is also a quality management tool by indicating which fasteners have been torqued and which have not yet been torqued. Torque striping can also show if any fasteners have been tampered with. The use of different colours can identify which fasteners were torqued at the time of assembly and which been re-torqued.



## Application

Torque striping shall be applied to fasteners once torqued to their final torque. Torque striping shall be applied as a continuous stripe of putty from the center of the cylindrical fastener, down the sides, and ending a minimum of 6mm or ¼" onto the fixed surface. The figure below shows proper torque striping on a bolt thread with nut and on a bolt head.



## Inspection

Observe each torque stripe. If the stripe is broken, lifted, or missing, remove the old torque stripe, inspect the parts for wear or damage, particularly on the threads. Replace any parts that are damaged or worn, then re-torque the fastener and apply a new torque stripe.

From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
 To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
 CC: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
 "Grimann, Carla" <Carla.Grimann@vancouver.ca>  
 "Augustine, Ray" <ray.augustine@vancouver.ca>  
 "Aramini, Joe" <joe.aramini@vancouver.ca>  
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 "Russell, Scott" <scott.russell@vancouver.ca>  
 "Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
 "Moyle, Krista" <Krista.Moyle@vancouver.ca>  
 "Jellema, Richard" <richard.jellema@vancouver.ca>

Date: 9/22/2023 5:12:14 PM

Subject: Train Refurb Updates 2023/09/22

Attachments: image002.png  
 image003.jpg  
 image004.jpg  
 image003 (1).jpg

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Hi again all,

A shorter update for today as we head into the weekend.

1) We've confirmed that A7904 Beaver Lake and A7906 Brockton Point should be sent next. A7904 shows "no specific findings" in our condition assessment.

2) The following is a summary of the work orders matched to the HHT rework procedure and their current revision status. I'll keep this updated and notify of any changes going forward.

Unit #	WO	Status	Number	Revision	HHT Procedure
					Status
A7737	231712	in process	23-003-WI001	2.0	
A7739	226131	in process	23-003-WI003	2.0	
A7901	226132	hold	23-003-WI005	1.0	
A7902	233959	decommissioned	n/a	n/a	
A7904	tbd	up next	23-003-WI008	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7905	234269	decommissioned	n/a	n/a	
A7906	226134	up next	23-003-WI010	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7907	226135	hold	23-003-WI011	1.0	
A7910	226136	in process	23-003-WI014	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)

Have a great weekend!

**Derek Puzzuoli**

Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.

P: +s.22(1) E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |  
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On Thu, Sep 21, 2023 at 8:21\u00a0PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Derek,

Thanks for the detailed findings from your site visit today. I just wanted to add a correction regarding the quantity of leaf springs on order.

We ordered 32 leaf springs for the two bogies from the decommissioned unit, Lumberman's Arch, before we made the larger order for the 5 carriages and 1 loco (192). The total number of leaf springs ordered is 224, which should be sufficient for 2 locos and 5 carriages.

Thanks,

**Rosemary Yip**

Train Operations Team Lead

Vancouver Park Board | City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Naᓇn, the xʷməθkʷəy̓əm (Musqueam), sḵwx̱w̱ú7mesh (Squamish) and səliłwətaʔ (Tseil-Waututh)*

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Thursday, September 21, 2023 6:09 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Augustine, Ray <[ray.augustine@vancouver.ca](mailto:ray.augustine@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: Train Refurb Updates 2023/09/21

Hi All,

I've opened a new thread for today's updates and left only the most recent / relevant details for the current status. I'll try to do this going forward to keep emails easier to read and file.

### **Follow up to Richard's questions / concerns:**

1) The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this? HHT: Replacement castings are not available, so our plan is to seek approval or a rework procedure from our welding engineer. The info has been transmitted and we've asked for this item to be prioritized. We expect initial guidance shortly. We can mitigate this by installing the bogies from A7737 onto locomotive A7739 when it's ready. This should be resolved before A7737 needs them.

2) The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected. This will still require disassembling the bogies, is that the plan? HHT: This is an area where we're having to develop some better guidance as it is critical, yet poorly described by Chance. We're hoping this can be a partial disassembly rather than a full teardown. However, we'll rely on you to advise. Part of our scope of work is to inspect this and collect info to provide guidance for future operations and maintenance. It was highlighted in the TSBC inspection report which prevented the ride from opening, and was brought up to us again when we met with the inspector in at Manitoba Yard last month. We took a closer look today and the fore/aft clearance is visibly suspect on the bogies from A7737, so they will need to be inspected and adjusted either way. We're happy to be there in person while the work is happening to help clarify what we're after. We need to look at it closely as well.

3) Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083 HHT: They are now ready to ship at Chance, but didn't make the first shipment. They should come in the next shipment. Date TBD.

4) That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too. HHT: Unfortunately only enough leaf springs were ordered one of the locomotives to have them replaced. This is because the second

locomotive was added to the scope after the order. It's possible Chance has more stock since they did have to manufacture a run of these parts for us.

5) And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order? HHT: The majority of the wheels appear to be within specification according to the Chance manual. The specification is primarily concerned with the thickness of the vertical flange as it is what retains the train on the track. There are some new spares in bench area near where A7902 is now if any of the wheels are found to be cracked, deformed, severely flat-spotted, etc.

**Status of A7902:**

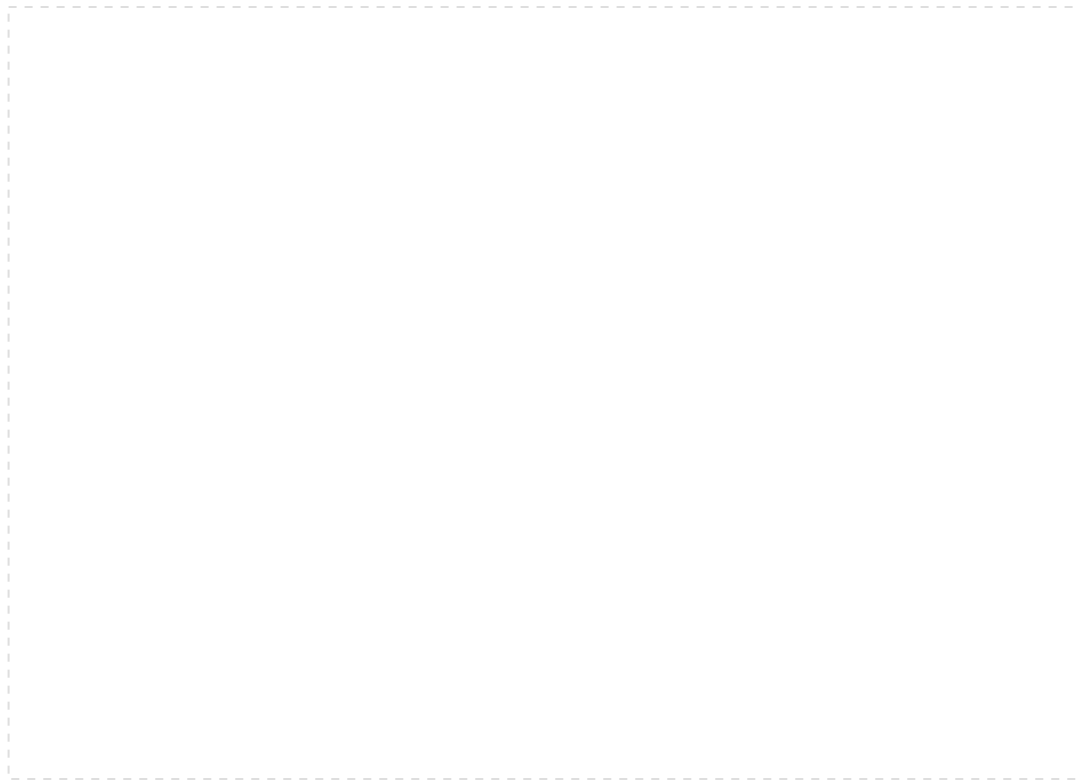
1) A7902 was not originally recommended by HHT to be refurbished for Train 1 as it has a highly modified frame and bogie.

2) It was suggested for A7902 to be sent with A7739 as an example of one of the "worst" units for material identification and welding engineering review. We thought this was a good idea to see if there's a variance between materials used and repair quality across the units. Since we have spare bogies from Lumberman's Arch, the modified bogie (which is beyond repair) could be replaced, leaving only the frame modifications to address.

3) Today, as we have it up on stands with the frame nearly at eye level, we can clearly see sagging in the frame on either end. The ends of the frame do not appear to be significantly loaded, so we immediately suspected permanent deformation.

4) Our measurements confirmed the sagging. We can clean up the data and share the measurement for anyone interested.

5) The modifications to the frame appear to have caused this deformation. To describe the modification, the frame stiffeners around the bogie mounts were notched out down to about half of their original height and then a new "flange" was added to them in an attempt to regain the original stiffness. The problem here is that the new height of the stiffener leaves little to no access to properly weld on the flange. See the image from our assessment report below.



6) This would have resulted in a significant decrease in strength even if it was possible to properly weld the flange. The deformation may be additional proof that it's not properly welded.

7) Repairing this will cause a significant delay and may come very close to the cost of a new frame as the frame would need to be straightened, have most of the stiffeners replaced, and then fully repainted. The frame shows several areas of significant corrosion that would also need to be addressed in this process. Therefore recommend decommissioning this unit and focusing on those in better condition.

8) We suspect this modification may have been originally made to accommodate the modifications to the bogie which has been made slightly taller in this area.

Regards,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.*

*Hedgehog Technologies Inc.*

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On Thu, Sep 21, 2023 at 2:02\u8239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

I have to wait for Carla, who is back in tomorrow, before we can decide where to put them. She's been working on finding storage, so let's see if her enquiries have borne fruit.

I would say let's bring them back here, but with no bogies on them, we can't move them into the barn or tunnel. And we can't just drop them into the paddock because that will impede the setup for Bright Nights.

Let's see what we can do.

Thanks,  
Rosemary

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Sent: Thursday, September 21, 2023 1:53 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi Rosemary,

We're at capacity at the shop for train space, happy to help where possibly. We'll need the two units (Lions gate /Lumberman's arch)that have been marked for decommissioning moved from FMS first to make room for the next 2 carriages. Let me know when the second carriage has been decided so we can move both to Manitoba at the same time. Where would you like the decommissioned units dropped off? You'll need to setup dunnage as the bogies have been removed for rebuilds.

Thanks,  
Mandeep S. Shergill, RSE Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations

250 W 70th Avenue, Vancouver BC, V5X 2X1

• Cellular: s.15(1)(l) | • Office: 604.326.4770

• [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca) <<mailto:mandeep.shergill@vancouver.ca>>

[CoV-EngineeringServices[1]]

From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)<mailto:rosemary.yip@vancouver.ca>>  
Sent: Thursday, September 21, 2023 10:42 AM  
To: Derek Pozzuoli  
<[derek.pozzuoli@hedgehogtech.com](mailto:derek.pozzuoli@hedgehogtech.com)<mailto:derek.pozzuoli@hedgehogtech.com>>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:richard.jellema@vancouver.ca>>  
Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)<mailto:joe.aramini@vancouver.ca>>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)<mailto:Sergio.Bevilacqua@vancouver.ca>>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)<mailto:John.Brodie@vancouver.ca>>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)<mailto:gerhard.wilcke@hedgehogtech.com>>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)<mailto:Bryan.Goh@vancouver.ca>>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)<mailto:ozzie.lepore@vancouver.ca>>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)<mailto:Brian.Neale@vancouver.ca>>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)<mailto:scott.russell@vancouver.ca>>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)<mailto:Mandeep.Shergill@vancouver.ca>>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)<mailto:trevor.gauthier@hedgehogtech.com>>; Moys, Krista <[Krista.Moys@vancouver.ca](mailto:Krista.Moys@vancouver.ca)<mailto:Krista.Moys@vancouver.ca>>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)<mailto:Carla.Grimann@vancouver.ca>>  
Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies  
Importance: High

Hi Derek,

A7901 can be ready to go as soon as Fleet arranges for the crane truck and can let us know when we can transport.

And if there's any possibility of taking a second carriage along with 7901, we'd love to take advantage of this opportunity to send another unit over as we're still searching for somewhere to store the units in advance of the tree work commencing on the 3rd.

Thank you,  
Rosemary

From: Derek Pozzuoli  
<[derek.pozzuoli@hedgehogtech.com](mailto:derek.pozzuoli@hedgehogtech.com)<mailto:derek.pozzuoli@hedgehogtech.com>>  
Sent: Thursday, September 21, 2023 10:34 AM  
To: Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:richard.jellema@vancouver.ca>>  
Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)<mailto:joe.aramini@vancouver.ca>>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)<mailto:Sergio.Bevilacqua@vancouver.ca>>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)<mailto:John.Brodie@vancouver.ca>>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)<mailto:gerhard.wilcke@hedgehogtech.com>>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)<mailto:Bryan.Goh@vancouver.ca>>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)<mailto:ozzie.lepore@vancouver.ca>>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)<mailto:Brian.Neale@vancouver.ca>>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)<mailto:scott.russell@vancouver.ca>>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)<mailto:Mandeep.Shergill@vancouver.ca>>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)<mailto:trevor.gauthier@hedgehogtech.com>>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)<mailto:rosemary.yip@vancouver.ca>>  
Subject: Re: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies



Hi all, We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend

Hi all,

We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend prepping it for transport immediately and standing by for confirmation of our findings.

Cheers,

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Thu, Sep 21, 2023 at 09:24 Derek Puzzuoli  
<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>> wrote:  
Correction- I will arrive closer to 10 now.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies  
778.791.3394

On Thu, Sep 21, 2023 at 07:57 Derek Puzzuoli  
<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>> wrote:  
Hi Richard,

Thanks for your questions. I'll be visiting this morning to review / discuss. ETA 915-930.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Wed, Sep 20, 2023 at 18:37 Jellema, Richard  
<[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>> wrote:  
After disassembly of the first two train bogies and the news that we are not rebuilding the drive bogies, I have a few questions and concerns.

- > The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this?
- > The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected.

This will still require disassembling the bogies, is that the plan?

- > Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083
- > That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too.
- > And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order?

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The information in this email is confidential and may be legally privileged. Access to this email by anyone other than the intended addressee is unauthorized. If you are not the intended recipient of this message, any review, disclosure, copying, distribution, retention, or any action taken or omitted to be taken in reliance on it is prohibited and may be unlawful. If you are not the intended recipient, please reply to or forward a copy of this message to the sender and delete the message, any attachments, and any copies thereof from your system.

### 3.9 A7902 (Lions Gate)



*Figure 29: Frame modifications & poor weld quality*

From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
CC: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
"Grimann, Carla" <Carla.Grimann@vancouver.ca>  
"Augustine, Ray" <ray.augustine@vancouver.ca>  
"Aramini, Joe" <joe.aramini@vancouver.ca>  
"Bevilacqua, Sergio" <Sergio.Bevilacqua@vancouver.ca>  
"Brodie, John" <John.Brodie@vancouver.ca>  
"Gerhard Wilcke" <gerhard.wilcke@hedgehogtech.com>  
"Goh, Bryan" <Bryan.Goh@vancouver.ca>  
"Lepore, Ozzie" <ozzie.lepore@vancouver.ca>  
"Neale, Brian" <Brian.Neale@vancouver.ca>  
"Russell, Scott" <scott.russell@vancouver.ca>  
"Trevor Gauthier" <trevor.gauthier@hedgehogtech.com>  
"Moyle, Krista" <Krista.Moyle@vancouver.ca>  
"Jellema, Richard" <richard.jellema@vancouver.ca>

Date: 9/26/2023 3:57:47 PM

Subject: Train Refurb Updates 2023/09/26

**City of Vancouver Warning - This message is from an external sender**

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Report Suspicious

Hi all,

For today's update, we'll keep it short again. Please reach out if you have any specific questions.

- 1) Trevor was onsite today to review the sandblasted bogie castings. All but one piece are cleared for paint. See additional details below for further recommendations.
- 2) Unfortunately it seems we've lost track of exactly which bogies they are since the markings were on them and then sandblasted off. HHT is happy to help track these bogies going forward as we intend to serialize them in order to connect prior maintenance history if needed later. [@Trevor Gauthier](#) and [@Shergill, Mandeep](#) can you please work closely to keep track? It should be easy to re-identify the pieces since only 3 have been done and we know which units they came from at least.
- 3) For the one bogie casting piece that is not cleared for paint, it's exhibiting a casting defect that we're considering currently. We're convinced it's been like this since new as these defects are common in large cast parts of this vintage. However, it may be a good data point to have additional NDT performed in order to understand in better detail what's happening around the area and if we are to expect any further deterioration. I believe Trevor may have marked this piece, but if not please confirm with him which should be held back.
- 4) We'll obviously be sending bogie frames to the paint shop in batches, so this one we're holding back can go in a future batch if needed.
- 5) Because of findings like the above, we recommend proceeding with disassembly and sandblasting on every bogie as soon they become available. We're happy to help keep track since there will be a significant number of in-process parts around the garage and may become difficult to manage over multiple shifts.

More progress tomorrow...

Derek

On Fri, Sep 22, 2023 at 5:11\u00239 PM Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)> wrote:  
Hi again all,

A shorter update for today as we head into the weekend.

- 1) We've confirmed that A7904 Beaver Lake and A7906 Brockton Point should be sent next. A7904 shows "no specific findings" in our condition assessment.
- 2) The following is a summary of the work orders matched to the HHT rework procedure and their current revision status. I'll keep this updated and notify of any changes going forward.

Unit #	WO	Status	HHT Procedure		
			Number	Revision	Status
A7737	231712	in process	23-003-WI001	2.0	
A7739	226131	in process	23-003-WI003	2.0	
A7901	226132	hold	23-003-WI005	1.0	
A7902	233959	decommissioned	n/a	n/a	
A7904	tbd	up next	23-003-WI008	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7905	234269	decommissioned	n/a	n/a	
A7906	226134	up next	23-003-WI010	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)
A7907	226135	hold	23-003-WI011	1.0	
A7910	226136	in process	23-003-WI014	1.0	revision 2.0 in process (ref: 23-003-WI014 bogie procedure)

Have a great weekend!

### Derek Puzzuoli

Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.

P: +s.22(1) E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |

206-2250 Boundary Road, Burnaby, BC, V5M 3Z3, Canada

[www.hedgehogtech.com](http://www.hedgehogtech.com) [[hedgehogtech.com](http://hedgehogtech.com)]



We make complex visions a practical reality.

On Thu, Sep 21, 2023 at 8:21\u00239 PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Derek,

Thanks for the detailed findings from your site visit today. I just wanted to add a correction regarding the quantity of leaf springs on order.

We ordered 32 leaf springs for the two bogies from the decommissioned unit, Lumberman's Arch, before we made the larger order for the 5 carriages and 1 loco (192). The total number of leaf springs ordered is 224, which should be sufficient for 2 locos and 5 carriages.

Thanks,

Rosemary Yip

Train Operations Team Lead

Vancouver Park Board City of Vancouver

[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)

Tel: 604-257-8465

Cel: s.15(1)(l)

Pronouns: she/her

*I acknowledge that we are on the unceded territories of the Coast Salish Nation, the x̱m̱ ḵ y̱ m̱ (Musqueam), s̱ w̱x̱ḻu̱8̱1̱7̱\_̱w̱w̱i̱7̱m̱esẖ (Squamish) and s̱ ḻiḻw̱ ṯa̱ (Tsleil-Waututh)*

From: Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>

Sent: Thursday, September 21, 2023 6:09 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Augustine, Ray <[ray.augustine@vancouver.ca](mailto:ray.augustine@vancouver.ca)>; Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: Train Refurb Updates 2023/09/21

Hi All,

I've opened a new thread for today's updates and left only the most recent / relevant details for the current status. I'll try to do this going forward to keep emails easier to read and file.

### **Follow up to Richard's questions / concerns:**

1) The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this? **HHT: Replacement castings are not available, so our plan is to seek approval or a rework procedure from our welding engineer. The info has been transmitted and we've asked for this item to be prioritized. We expect initial guidance shortly. We can mitigate this by installing the bogies from A7737 onto locomotive A7739 when it's ready. This should be resolved before A7737 needs them.**

2) The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected. This will still require disassembling the bogies, is that the plan? HHT: This is an area where we're having to develop some better guidance as it is critical, yet poorly described by Chance. We're hoping this can be a partial disassembly rather than a full teardown. However, we'll rely on you to advise. Part of our scope of work is to inspect this and collect info to provide guidance for future operations and maintenance. It was highlighted in the TSBC inspection report which prevented the ride from opening, and was brought up to us again when we met with the inspector in at Manitoba Yard last month. We took a closer look today and the fore/aft clearance is visibly suspect on the bogies from A7737, so they will need to be inspected and adjusted either way. We're happy to be there in person while the work is happening to help clarify what we're after. We need to look at it closely as well.

3) Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083 HHT: They are now ready to ship at Chance, but didn't make the first shipment. They should come in the next shipment. Date TBD.

4) That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too. HHT: Unfortunately only enough leaf springs were ordered one of the locomotives to have them replaced. This is because the second locomotive was added to the scope after the order. It's possible Chance has more stock since they did have to manufacture a run of these parts for us.

5) And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order? HHT: The majority of the wheels appear to be within specification according to the Chance manual. The specification is primarily concerned with the thickness of the vertical flange as it is what retains the train on the track. There are some new spares in bench area near where A7902 is now if any of the wheels are found to be cracked, deformed, severely flat-spotted, etc.

#### **Status of A7902:**

1) A7902 was not originally recommended by HHT to be refurbished for Train 1 as it has a highly modified frame and bogie.

2) It was suggested for A7902 to be sent with A7739 as an example of one of the "worst" units for material identification and welding engineering review. We thought this was a good idea to see if there's a variance between materials used and repair quality across the units. Since we have spare bogies from Lumberman's Arch, the modified bogie (which is beyond repair) could be replaced, leaving only the frame modifications to address.

3) Today, as we have it up on stands with the frame nearly at eye level, we can clearly see sagging in the frame on either end. The ends of the frame do not appear to be significantly loaded, so we immediately suspected permanent deformation.

4) Our measurements confirmed the sagging. We can clean up the data and share the measurement for anyone interested.

5) The modifications to the frame appear to have caused this deformation. To describe the modification, the frame stiffeners around the bogie mounts were notched out down to about half of their original height and then a new "flange" was added to them in an attempt to regain the original

stiffness. The problem here is that the new height of the stiffener leaves little to no access to properly weld on the flange. See the image from our assessment report below.



6) This would have resulted in a significant decrease in strength even if it was possible to properly weld the flange. The deformation may be additional proof that it's not properly welded.

7) Repairing this will cause a significant delay and may come very close to the cost of a new frame as the frame would need to be straightened, have most of the stiffeners replaced, and then fully repainted. The frame shows several areas of significant corrosion that would also need to be addressed in this process. Therefore recommend decommissioning this unit and focusing on those in better condition.

8) We suspect this modification may have been originally made to accommodate the modifications to the bogie which has been made slightly taller in this area.

Regards,

**Derek Puzzuoli**

*Lead Mechanical Engineer, P.Eng.  
Hedgehog Technologies Inc.*

P: **s.22(1)** | E: [derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com) |  
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[\[twitter.com\]](https://twitter.com) [\[linkedin.com\]](https://www.linkedin.com) [\[facebook.com\]](https://www.facebook.com)  
We make complex visions a practical reality.

On Thu, Sep 21, 2023 at 2:02\u00a0PM Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)> wrote:

Hi Mandeep,

I have to wait for Carla, who is back in tomorrow, before we can decide where to put them. She's been working on finding storage, so let's see if her enquiries have borne fruit.

I would say let's bring them back here, but with no bogies on them, we can't move them into the barn or tunnel. And we can't just drop them into the paddock because that will impede the setup for Bright Nights.

Let's see what we can do.

Thanks,  
Rosemary

From: Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>

Sent: Thursday, September 21, 2023 1:53 PM

To: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>; Gerhard Wilcke <[gerhard.wilcke@hedgehogtech.com](mailto:gerhard.wilcke@hedgehogtech.com)>; Goh, Bryan <[Bryan.Goh@vancouver.ca](mailto:Bryan.Goh@vancouver.ca)>; Lepore, Ozzie <[ozzie.lepore@vancouver.ca](mailto:ozzie.lepore@vancouver.ca)>; Neale, Brian <[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>; Russell, Scott <[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>; Moyls, Krista <[Krista.Moyls@vancouver.ca](mailto:Krista.Moyls@vancouver.ca)>; Grimann, Carla <[Carla.Grimann@vancouver.ca](mailto:Carla.Grimann@vancouver.ca)>; Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>

Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi Rosemary,

We're at capacity at the shop for train space, happy to help where possibly. We'll need the two units (Lions gate /Lumberman's arch)that have been marked for decommissioning moved from FMS first to make room for the next 2 carriages. Let me know when the second carriage has been decided so we can move both to Manitoba at the same time. Where would you like the decommissioned units dropped off? You'll need to setup dunnage as the bogies have been removed for rebuilds.

Thanks,

Mandeep S. Shergill, RSE Superintendent I  
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From: Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)><mailto:[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>>

Sent: Thursday, September 21, 2023 10:42 AM

To: Derek Puzzuoli

<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)><mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>>; Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)><mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)><mailto:[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)><mailto:[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)><mailto:[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>>; Gerhard Wilcke

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Subject: RE: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Importance: High

Hi Derek,

A7901 can be ready to go as soon as Fleet arranges for the crane truck and can let us know when we can transport.

And if there's any possibility of taking a second carriage along with 7901, we'd love to take advantage of this opportunity to send another unit over as we're still searching for somewhere to store the units in advance of the tree work commencing on the 3rd.

Thank you,  
Rosemary

From: Derek Puzzuoli

<[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)><mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>>

Sent: Thursday, September 21, 2023 10:34 AM

To: Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)><mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>>

Cc: Aramini, Joe <[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)><mailto:[joe.aramini@vancouver.ca](mailto:joe.aramini@vancouver.ca)>>; Bevilacqua, Sergio <[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)><mailto:[Sergio.Bevilacqua@vancouver.ca](mailto:Sergio.Bevilacqua@vancouver.ca)>>; Brodie, John <[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)><mailto:[John.Brodie@vancouver.ca](mailto:John.Brodie@vancouver.ca)>>; Gerhard Wilcke

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<[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)><mailto:[Brian.Neale@vancouver.ca](mailto:Brian.Neale@vancouver.ca)>>; Russell, Scott

<[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)<mailto:[scott.russell@vancouver.ca](mailto:scott.russell@vancouver.ca)>>; Shergill, Mandeep <[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)<mailto:[Mandeep.Shergill@vancouver.ca](mailto:Mandeep.Shergill@vancouver.ca)>>; Trevor Gauthier <[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)<mailto:[trevor.gauthier@hedgehogtech.com](mailto:trevor.gauthier@hedgehogtech.com)>>; Yip, Rosemary <[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)<mailto:[rosemary.yip@vancouver.ca](mailto:rosemary.yip@vancouver.ca)>>  
Subject: Re: REVISION: Refurbishing Checklists - A7737, A7739, Carriage Bogies

Hi all, We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend

Hi all,

We've found an issue on A7902 Lion's Gate that is very likely going to lead to a decommissioning of that unit. Please halt all work on the upper carriage but continue the work on the bogies. We'll likely replace it with A7901. I recommend prepping it for transport immediately and standing by for confirmation of our findings.

Cheers,

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Thu, Sep 21, 2023 at 09:24 Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>> wrote:  
Correction- I will arrive closer to 10 now.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Thu, Sep 21, 2023 at 07:57 Derek Puzzuoli <[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)<mailto:[derek.puzzuoli@hedgehogtech.com](mailto:derek.puzzuoli@hedgehogtech.com)>> wrote:  
Hi Richard,

Thanks for your questions. I'll be visiting this morning to review / discuss. ETA 915-930.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

On Wed, Sep 20, 2023 at 18:37 Jellema, Richard <[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)<mailto:[richard.jellema@vancouver.ca](mailto:richard.jellema@vancouver.ca)>> wrote:  
After disassembly of the first two train bogies and the news that we are not rebuilding the drive

bogies, I have a few questions and concerns.

- > The initial rebuild list for unit A7739 requires one of the bogie frames to be replaced because of a weld repair, are we still doing this?
- > The new rebuild lists for the drive bogies still require the axles and journal boxes to be inspected. This will still require disassembling the bogies, is that the plan?
- > Most of the leaf springs on the first two bogies are broken and they are not in the part kits. Have they been ordered? The part number is 301-72083
- > That being said. The leaf springs look like a weak point and now that the drive bogies are out. The springs should be checked and or replaced, on them too.
- > And lastly. Some of the wheels look quite worn out and there are no wheels in the part kits. Are they on order?

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From: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
To: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
Date: 9/29/2023 8:18:30 AM  
Subject: Weekend Overtime Request Approval Saturday Sept.30th

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Hi Rosemary,

The green unit is coming long and do require an weekend OT shift to keep it going moment going. I need to bring in Gurmukh for Saturday Sept. 30 for 10 hours so the following work can be completed :

Complete the installation of the wiring harness inside the frame  
Install the inverter  
Mount Battery Charger  
Dry Fit driveline

Hoping the remainder of the parts arrive next week we should be able to wrap up the upper structure by end of week Friday (red train bogies require a bit more work than anticipated) Will speak to the machine on a completion time Monday. Being a statutory holiday this week and next its tough to have staff come in. I'm anticipating to bring a bigger crew in next weekend and would like to give them a bit of time to plan for it. They would be working on the various bogies rebuild currently in the shop and focusing on the red train. Saturday and Sunday 10 hours 3-4 (staff dependant on key staff availability).

Let me know if this Saturday is a go I do require a cost number to charge out the time , we can chat further about the progress mid next week and plan for the upcoming weekend then.

Thanks,  
Mandeep S. Shergill, *RSE* Superintendent I  
City of Vancouver | Fleet and Manufacturing Services  
DayShift Manitoba Garage Operations  
250 W 70<sup>th</sup> Avenue | Vancouver BC, V5X 2X1  
( Cellular s.15(1)(l) | ( Office: 604.326.4770  
\* [mandeep.shergill@vancouver.ca](mailto:mandeep.shergill@vancouver.ca)



From: "Derek Puzzuoli" <derek.puzzuoli@hedgehogtech.com>  
To: "Shergill, Mandeep" <Mandeep.Shergill@vancouver.ca>  
CC: "Yip, Rosemary" <rosemary.yip@vancouver.ca>  
Date: 9/22/2023 7:26:54 AM  
Subject: Work orders vs unit numbers

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Hi Mandeep,

Due to the ongoing changes in work details, it's become apparent to me that we (HHT) need to list out all of the repair checklists we've delivered and clarify which revs are current and where changes may be coming. With this, it would also be helpful for us to match your work order numbers to our procedures for clear communication. I intend to provide an excerpt from our internal document register that details this. Can you send me your list of WO's with the unit numbers so I can match them up. I intend to communicate this list to the full team in an upcoming update, Monday latest.

Derek Puzzuoli  
Lead Mechanical Engineer  
Hedgehog Technologies

s.22(1)

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**From:** [Dave Lywak](#)  
**To:** [Yip, Rosemary](#)  
**Subject:** Follow up to site meeting Oct.30.23  
**Date:** Tuesday, October 31, 2023 9:51:26 AM  
**Attachments:** [Stanley park train site visit oct.30.23.docx](#)

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Hi Rosemary,

Please see attached list from yesterday's site meeting in regards issues that need to be addressed.

Please let me know if you need. Any clarification or have any other questions.

Best,

Regards,

**Dave Lywak** | Safety Officer, Elevating Devices, Passenger Ropeways & Amusement Devices

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## Technical safety BC

Stanley Park Train site visit Oct.30.2023

With Hedgehog Technologies INC.

List of track deficiency observed during on-site meeting.

1. Repair/ ensure track gauge tool is operational to ensure that monthly track gauge check can be completed as per manufactures requirements.
2. Inspected/ ensure that track ballast meets manufactures minimum requirements.
3. Check / verify that track gauge meets manufacturers operating parameters. Multiple areas identified to gauge issues at time of assessment. Second corner from loading platform. All three track switches.
4. Ensure that all track switch weld repairs, have corrosion protection to prevent cracking and fatigue.
5. Ensure that Fleet services inspected and check all hardware and fasteners that were involved in train major component overhaul. As well all major components on the carriages.
6. Ensure that all track rail joints meet manufacture min and maximum operating tolerances.

Please ensure that the following have be checked and repaired as required prior to the final inspection on November.27.2023.