

Appendix A

OCCUPATION SCHEDULE FOR: Operating Engineer (Universal Equipment Operator)

O*NET/SOC CODE: 47-2073-02
RAPIDS CODE: 0365HY

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The term of the occupation shall be 3 years with an OJL attainment of not less than 4000 OJL hours supplemented by the required hours of related instruction.

2. RATIO OF APPRENTICES TO JOURNEYWORKERS

The ratio of apprentices to journeyworkers is established in the applicable collective bargaining agreement, or as agreed by the JAC. This ratio will be defined as no more than one (1) apprentice for every five (5) journeyworkers.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyworker wage rate, as follows or as per the collective bargaining agreement.

3 Year Term:

60%	1 to 1000 Hours
70%	1001 to 2000 Hours
80%	2001 to 4000 Hours
90%	4001 to 6000 Hours

4. SCHEDULE OF WORK EXPERIENCE
(See attached Occupation Schedule)

The Sponsor may modify to the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

5. SCHEDULE OF RELATED INSTRUCTION
(See attached Course Outline)

SCHEDULE OF WORK EXPERIENCE:

Operating Engineer (Universal Equipment Operator)

	<u>Approximate Hours</u>	
	<u>Min.</u>	<u>Max.</u>
1. Backhoe - Wheel & Track	640	1000
a) Perform preventive maintenance, proper oils and greases, and minor adjustments.		
b) Assist in changing teeth and adjusting brakes and clutches.		
c) Operate using the controls, their importance in proper operation, and movement of machine for safety of other employees, digging underground utilities, working the proper distance from overhead power lines, and other equipment working near machine.		
d) Apply technical knowledge and assist during major overhauls while working with the operator, heavy duty repairperson, and welder.		
2. Dragline and Other Bucket-Type Equipment	640	1000
a) Identify name and use of various draglines and attachments.		
b) Perform preventive maintenance, using proper oils and greases, and make minor adjustments.		
c) Assist in changing teeth and cables as well as adjusting frictions, brakes, and clutches.		
d) Operating using the controls, their importance in proper operation, and movement of machine for safety of other employees, digging underground utilities, working proper distance from overhead power lines, and other equipment working near machine.		
e) Apply technical knowledge and assist during major overhauls while working with the operator, heavy duty repairperson, and welder.		
3. Crawler and Wheel-Type Cranes, Derricks, Piledrivers, and Bridge and Gantry Cranes	640	1000
a) Identify name and uses of various cranes and derricks.		
b) Perform preventive maintenance, using proper oils and greases, and make minor adjustments.		
c) Assist in adjusting frictions, brakes, and clutches.		
d) Operate using the controls, their importance in proper		

	operation, and movement of the machine for the safety of other employees, working proper distance from overhead power lines, and other equipment working near the machine.		
	e) Apply technical knowledge and assist during major overhauls while working with the operator, heavy duty repairperson and welder.		
	f) Calculate the proper loads that the machine and cables will safely handle.		
	g) Acquire knowledge in operating a live boom and regular operations.		
	h) Give and receive proper hand signals.		
	i) Identify name and uses of piledriving equipment.		
	j) Assist in the programming of LMIs and computer aided accessories for safe and proper set-up and crane operation.		
4.	Skip and Air Tugger Hoists, Elevators, etc.	150	200
	Assist in making proper adjustments on engine-driven hoists and learn to make repairs and adjustments on air tuggers and air compressors.		
5.	Cableways	150	200
	Operate cableways and make adjustments.		
6.	Motor Crane Driver	225	350
	Drive a truck crane and place it for most convenient operation of the crane. Study the Federal CDL laws and obtain a CDL license.		
7.	Tracked Equipment	205	250
	Operate dinkey and locomotive engines.		
8.	Use of Grade Instruments and Plans	325	500
	a) Use instruments and read plans for making grades.		
	b) Read and set grade stakes as well as read plans and instructions.		
9.	Soil Solidification	225	250
	Use principles and methods of soil solidification and handle specialty equipment designed for same.		
10.	Miscellaneous Equipment	300	500

- a) Operate, service, and adjust all types of pumps.
- b) Operate and maintain all pumping equipment, such as pump crete machine, concrete pump, gunite machine, etc.
- c) Assist in installing, operating, and maintaining well-point systems.
- d) Operate, service, and adjust all types of mechanical heaters.
- e) Operate, service, and adjust all types of electric generating plants.
- f) Operate, service, and adjust all other types of equipment.

11. Auxiliary Equipment	200	250
Assist in rigging and operating attachments used on universal equipment.		
12. Maintenance - Cutting and Burning - Greases and Oils	300	500
a) Use various welders and welding equipment.		
b) Assist in making minor repairs and adjustments.		
c) Assist in welding and cutting.		
d) Gain knowledge and use appropriate greases and oils.		
Total Hours	4000	6000

These schedules are to be considered flexible and may be revised by the JAC to accommodate any condition and may, with the approval of the JAC, be applied interchangeably among the different apprentice classifications.

SCHEDULE OF RELATED INSTRUCTION

Operating Engineer (Universal Equipment Operator)

<u>First Year</u>	<u>Approximate Hours</u>
Introduction	20
a) Apprenticeship Rules and Regulations	
b) Local Union Orientation	
c) Issue Books	
d) Drug & Alcohol presentation	
e) Labor History	
f) Diversity	
Safety	4
O.S.H.A. Rules and Regulations	
Commercial Drivers License Preparation	8
a) Testing Requirements	
b) Inspection Stipulations	
c) Driving Course	
Hazmat	40
40 Hour Certification Course	
Fuels and Lubricants	8
a) Fuels, Oils, Grease and Equipment	
b) Grease Truck and Tools	
Health	8
Standard First Aid & CPR	
Basic Equipment Skills (technical training and seat time)	96
a) Forklift and Skidsteer loader/dozer	
b) Crane	
c) Backhoe	
d) Dragline	
e) Forklift Certification	
Total Hours	184

<u>Third Year</u>	<u>Approximate Hours</u>
Welding	10
a) Oxygen and Acetylene Welding	
b) Electrical Welding	
c) Cutting	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Use of Grade Instruments and Plans	16
a) Transit and Hand Level	
b) Theodolite	
c) Leveling Rods	
d) Measurement Instruments	
e) Stakes	
f) Introduction to Global Positioning Systems	
Mechanical System	6
a) Basic Hydraulics	
b) Basic Electrical	
c) Power Trains	
Equipment Skills (technical training and seat time)	104
a) Forklift and Skidsteer loader/dozer	
b) Crane	
c) Backhoe	
d) Dragline	
e) Clam	
f) Forklift Certification	
	Total Hours 144

**TRADE SCHEDULE: OPERATING ENGINEER (GRADE AND PAVING
EQUIPMENT OPERATOR)
O*NET/SOC CODE: 47-2073-02
RAPIDS CODE: 0365HY**

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The term of apprenticeship shall be a period of 3 years (not less than 4000 hours) supplemented by the required hours of related technical instruction.

2. RATIO OF APPRENTICES TO JOURNEY WORKERS

The ratio of apprentices to journeyworkers is established in the applicable collective bargaining agreement, or as agreed to by the Local JAC.

This ratio will be defined as no more than one (1) apprentice for every five (5) journeyworkers.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyworker wage rate, as follows or as per the collective bargaining agreement.

60%	1 to 1000 Hours
70%	1001 to 2000 Hours
80%	2001 to 4000 Hours
90%	4001 to 6000 Hours

**4. SCHEDULE OF WORK EXPERIENCE
(See attached Trade Schedule)**

**5. SCHEDULE OF RELATED INSTRUCTION
(See attached Course Outline)**

SCHEDULE OF WORK EXPERIENCE:

Operating Engineer (Grade and Paving Equipment Operator)

	Approximate Hours	
	<u>Min.</u>	<u>Max.</u>
1. Graders	500	700
a) Assist in servicing, maintaining, and adjusting the machine.		
b) Operate and assist in the different types of work the machine does, such as fine grading, back sloping, mixing, and laying oil, etc.		
c) Operate and maintain elevating graders.		
d) Assist in installing and using different types of laser systems.		
2. Scrapers, self-propelled	300	400
a) Operate various motor and motor-electric driven machines.		
b) Make proper cuts and fills to the grade stakes.		
c) Assist in servicing, maintaining, and repairing the different makes of machines.		
3. Compaction Equipment	200	300
Operate different types of rollers and other compaction equipment using different procedures for compacting various materials.		
4. Tractor-Type Skip Loaders/Hi-Lifts	350	500
Operate, service, and make minor repairs and adjustments.		
5. Wheel-Type Tractors, including Forklifts, Lumber Carriers, etc.	250	300
Assist in servicing, maintaining, and making minor repairs and adjustments.		
6. Grade Stakes	400	600
Check, read, and set grade stakes and read plans.		
7. Trenching Machines and Backhoes – Wheel & Track	300	500
Trenching		
a) Operate, maintain, and repair all types and sizes of machines.		

Backhoe – Wheel & Track

- a) Perform preventive maintenance, proper oils and greases, and minor adjustments.
- b) Assist in changing teeth and adjusting brakes and clutches.
- c) Operate using the controls, their importance in proper operation, and movement of machine for safety of other employees, digging underground utilities, working the proper distance from overhead power lines, and other equipment working near machine.
- d) Apply technical knowledge and assist during major overhauls while working with the operator, heavy duty repairperson, and welder.

8. Bulldozer	300	450
<ul style="list-style-type: none">a) Operate on the different types of work assigned the dozer from pioneer and rough excavation to finish work.b) Assist in making minor adjustments and repairs and work with the mechanic on major repairs.		
9. Scrapers, Towed	350	550
<ul style="list-style-type: none">a) Operate properly.b) Service, adjust, and change cables on cable-controlled machines.		
10. Miscellaneous Equipment	300	500
<ul style="list-style-type: none">a) Operate, service, and adjust all types of pumps.b) Operate and maintain all pumping machines, such as pumpcrete machine, concrete pump, gunite machine, etc.c) Install, operate, and maintain well-point systems.d) Operate, service, and adjust all types of mechanical heaters.e) Operate, service, and adjust all types of electric generating plants.f) Operate, service, and adjust all other types of equipment, air compressors, and the use and operation of all auxiliary equipment.		
11. Asphalt and Concrete Paver	400	650
<ul style="list-style-type: none">a) Operate and also become familiar with control of mixing time apparatus.b) Assist in making adjustments and repairs and to service machines.c) Operate, set-up, and make mechanical and electronic adjustments to screed.d) Operate, set-up, and make mechanical and electronic adjustments to finishing machine.		

12. Special Paving Equipment	250	350
a) Operate, service, and adjust gutter pavers, curb pavers, vibrators, concrete saws, pavement breakers, and similar equipment.		
b) Operate and make adjustments and repairs to chip spreader.		
13. Maintenance - Cutting and Burning - Greases and Oils	100	200
a) Use various welders and welding equipment.		
b) Assist in making minor repairs and adjustments.		
c) Perform minor welding repair and cutting.		
d) Use proper types of greases and oils.		
Total Hours	4000	6000

These schedules are to be considered flexible and may be revised by the JAC to accommodate any condition and may, with the approval of the JAC, be applied interchangeably among the different apprentice classifications.

SCHEDULE OF RELATED INSTRUCTION:

Operating Engineer (Grade and Paving Equipment Operator)

<u>First Year</u>	<u>Approximate Hours</u>
Introduction	20
a) Apprenticeship Rules and Regulations	
b) Local Union Orientation	
c) Issue Books	
d) Drug & Alcohol Presentation	
e) Labor History	
f) Diversity	
Safety	4
O.S.H.A. Rules and Regulations	
Commercial Drivers License Preparation	8
a) Testing Requirements	
b) Inspection Stipulations	
c) Driving Course	
Hazmat	40
40 Hour Certification Course	
Fuels and Lubricants	8
a) Fuels, Oils, Grease, and Equipment	
b) Grease Truck and Tools	
Health	8
Standard First Aid and CPR	
Basic Equipment Skills (technical training and seat time)	96
a) Graders	
b) Scrapers, self-propelled and towed	
c) Rollers and other compaction equipment	
d) Tractor-Type Skip Loaders/Hi-Lifts	

- e) Wheel-Type Tractors, Forklifts, Lumber Carriers, etc.
- f) Trenching Machines and Backhoe- Wheel & Track
- g) Bulldozer
- h) Asphalt Paver, Special Paving Equipment, & Concrete Paver
- i) Forklift Certification

Total Hours

184

<u>Second Year</u>	<u>Approximate Hours</u>
Hydraulics	24
a) Systems	
b) Adjustments	
c) Maintenance	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Soil Compaction	8
Basic Equipment Skills (technical training and seat time)	104
a) Graders	
b) Scrapers, self-propelled and towed	
c) Rollers and other compaction equipment	
d) Tractor-Type Skip Loaders/Hi-Lifts	
e) Wheel-Type Tractors, Forklifts, Lumber Carriers, etc.	
f) Trenching Machines and Backhoe- Wheel & Track	
g) Bulldozer	
h) Asphalt Paver, Special Paving Equipment, & Concrete Paver	
i) Forklift certification	
Total Hours	144

<u>Third Year</u>	<u>Approximate Hours</u>
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Use of Grade Instruments and Plans	24
a) Transit and Hand Level	
b) Theodolite	
c) Leveling Rods	
d) Measurement Instruments	
e) Stakes	
f) Introduction to Global Positioning Systems	
Mechanical System	8
a) Basic Hydraulics	
b) Power Trains	
Equipment Skills (technical training and seat time)	104
a) Graders	
b) Scrapers, self-propelled and towed	
c) Rollers and other compaction equipment	
d) Tractor-Type Skip Loaders/Hi-Lifts	
e) Wheel-Type Tractors, Forklifts, Lumber Carriers, etc.	
f) Trenching Machines and Backhoe- Wheel & Track	
g) Bulldozer	
h) Asphalt Paver, Special Paving Equipment, & Concrete Paver	
i) Forklift certification	
Total Hours	144

TRADE SCHEDULE: OPERATING ENGINEER (PLANT EQUIPMENT OPERATOR)
O*NET CODE/SOC: 47-2073-02
RAPIDS CODE: 0365HY

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The term of apprenticeship shall be a period of 3 years (not less than 4000 hours) supplemented by the required hours of related technical instruction.

2. RATIO OF APPRENTICES TO JOURNEY WORKERS

The ratio of apprentices to journeyworkers is established in the applicable collective bargaining agreement, or as agreed to by the JAC.

This ratio will be defined as no more than one (1) apprentice for every five (5) journeyworkers.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyworker wage rate, as follows or as per the collective bargaining agreement.

60%	1 to 1000 Hours
70%	1001 to 2000 Hours
80%	2001 to 4000 Hours
90%	4001 to 6000 Hours

4. SCHEDULE OF WORK EXPERIENCE
(See attached Trade Schedule)

5. SCHEDULE OF RELATED INSTRUCTION
(See attached Course Outline.)

SCHEDULE OF WORK EXPERIENCE:

Operating Engineer (Plant Equipment Operator)

	Approximate Hours	
	<u>Min.</u>	<u>Max.</u>
1. Asphalt Plants	700	1000
a) Assist in keeping proper fire under dryer drum to heat and dry aggregates for proper mixing by means of valves or control levers.		
b) Operate handles, levers, and controls that (1) automatically weigh dry sand, stone, and asphalt; and (2) dump them into the mixing drum.		
2. Batch Plants, Concrete Mixers, and Pugmills	700	1000
a) Assist in weighing aggregate for concrete.		
b) Adjust scales for required weight of material.		
c) Assist in making proper mixes.		
3. Crushing, Screening, and Washing Plants	700	1000
a) Assist in making proper adjustments to crush the size of material desired.		
b) Make repairs on the equipment.		
c) Service conveyors.		
d) Adjust conveyor belts.		
e) Operate shaker screens to separate the different sizes of materials.		
f) Change screens to get the desired size of materials.		
g) Operate a washing plant and sand classifier.		
4. Material Loaders	300	400
a) Operate, service, and adjust various types of front-end loaders, tractors, conveyors, and fork lifts.		
b) Make minor repairs and adjustments under the supervision of a repairperson.		
5. Drills	150	300
a) Operate various types of drills and the care and purpose of same.		
b) Perform maintenance, running repairs, and replacements on various types of steel and bits.		
6. Maintenance - Cutting and Burning - Greases and Oils	200	200
a) Assist in making necessary repairs to the equipment under supervision of a heavy duty repairperson or a welder.		
b) Use proper oils and greases.		

7. Erecting and Dismantling	250	350
Assist in set up and repair all types of plant equipment.		
8. Welding, Cutting, and Burning	350	500
a) Use various welders and welding equipment.		
b) Assist in building up and repairing worn parts.		
9. Materials	200	550
Use instruments and plans for processing the various materials.		
10. Miscellaneous Equipment	450	700
a) Operate, service, and adjust all varieties of miscellaneous equipment.		
b) Operate and maintain pumping machines, such as pump crete machine, concrete pump, gunite machine, etc.		
c) Install, operate, and maintain well-point systems.		
d) Operate, service, and adjust all types of mechanical heaters.		
e) Operate, service, and adjust all types of electric generating plants.		
f) Operate, service, and adjust all types of air compressors and to use and operate all auxiliary equipment.		
Total Hours	4000	6000

These schedules are to be considered flexible and may be revised by the JAC to accommodate any condition and may, with the approval of the JAC, be applied interchangeably among the different apprentice classifications.

<u>Second Year</u>	<u>Approximate Hours</u>
Hydraulics	16
a) Systems	
b) Adjustments	
c) Maintenance	
Use of Grade Instruments and Plans	16
a) Transit and Hand Level	
b) Theodolite	
c) Leveling Rods	
d) Measurement Instruments	
e) Stakes	
f) Introduction to Global Positioning Systems	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Basic Equipment Skills (technical training and seat time)	104
a) Forklift and Skidsteer Loader/Dozer	
b) Crane	
c) Backhoe	
d) Dragline	
e) Clam	
f) Forklift Certification	
Total Hours	144

<u>Third Year</u>	<u>Approximate Hours</u>
Welding	24
a) Oxygen and Acetylene Welding	
b) Electrical Welding	
c) Cutting	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Mechanical System	8
a) Basic Hydraulics	
b) Power Trains	
Equipment Skills (technical training and seat time)	104
a) Forklift and Skidsteer loader/dozer	
b) Crane	
c) Backhoe	
d) Dragline	
e) Clam	
f) Forklift Certification	
Total Hours	144

TRADE SCHEDULE: OPERATING ENGINEER (HEAVY DUTY REPAIRER)
O*NET CODE/SOC: 47-2073-02
RAPIDS CODE: 0365HY

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The term of apprenticeship shall be a period of 3 years (not less than 4000 hours) supplemented by the required hours of related technical instruction.

2. RATIO OF APPRENTICES TO JOURNEYWORKERS

The ratio of apprentices to journeyworkers is established in the applicable collective bargaining agreement, or as agreed to by the JAC.

This ratio will be defined as no more than one (1) apprentice for every five (5) journeyworkers.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyworker wage rate, as follows or as per the collective bargaining agreement.

60%	1 to 1000 Hours
70%	1001 to 2000 Hours
80%	2001 to 4000 Hours
90%	4001 to 6000 Hours

4. SCHEDULE OF WORK EXPERIENCE
(See attached Trade Schedule)

5. SCHEDULE OF RELATED INSTRUCTION
(See attached Course Outline)

SCHEDULE OF WORK EXPERIENCE:

Operating Engineer (Heavy Duty Repairer)

		Approximate Hours	
		<u>Min.</u>	<u>Max.</u>
1.	Cleaning and inspecting the parts of all types of equipment	100	100
2.	Cylinder Heads	350	550
	a) Checking and inspecting heads.		
	b) Replacing valve guides.		
	c) Removing and replacing valve seats.		
	d) Reaming valve guides.		
	e) Grinding valve seats with hard-seat grinder.		
	f) Lapping valves.		
	g) Checking valves with dial indicator.		
	h) Installing injector tubes or brass.		
	i) Replacing Welsh plugs and water test head.		
	j) Rebushing rocker-arms and reaming bushings.		
	k) Checking and replacing rocker-arm rollers.		
	l) Torquing cylinder head bolts.		
	m) Use of compounds on head gaskets.		
	n) Torquing injectors and adjustment.		
3.	Cylinder Blocks and Liners	300	500
	a) Removing and installing cylinder sleeves.		
	b) Cleaning and checking water passages.		
	c) Checking counterbores for sleeves.		
	d) Recutting and straightening counterbores.		
	e) Removing and cutting cylinder studs.		
	f) Cleaning ring grooves, fitting piston and ring for clearance.		
	g) Installing piston pin bushings and fitting piston pins.		
	h) Checking rod alignment and bores.		
	i) Honing and boring cylinders.		
	j) Cleaning oil passages.		
	k) Inspecting oil and oil lines.		
	l) Checking, removing, and installing timing gears.		
	m) Checking main bearing saddles, crank shaft wear and cracks, and radius area.		
	n) Reasons for Magnafluxing.		
	o) Installing main and rod bearings.		
	p) Checking oil clearances.		
	q) Torquing main and rod bearings.		
	r) Installing cam shaft bushings and line reaming and bearings.		
	s) Pressure test oil systems.		
	t) Dial indicating run out on fly wheel and housings.		

4.	Fuel Systems	300	650
	<ul style="list-style-type: none"> a) Adjusting valve clearances. b) Installing and adjusting injectors. c) Checking compression. d) Checking and adjusting injection and carburetion systems. e) Care and cleaning of air filters. f) Timing injection system. g) Repairing fuel pumps and carburetors. h) Checking and servicing fuel filtering systems. 		
5.	Electrical Systems	400	575
	<ul style="list-style-type: none"> a) Timing electrical systems. b) Using proper equipment to check electrical systems. c) Repairing generators and starters. d) Adjusting voltage regulators. e) Making up and installing wiring circuits. 		
6.	Water Cooling System	200	300
	<ul style="list-style-type: none"> a) Checking thermostats. b) Cleaning water passages. c) Installing new gaskets on radiator tanks. d) Checking pressures on cooling systems. e) Adjusting fan belts and friction-driven fan drivers. 		
7.	Clutch	400	525
	<ul style="list-style-type: none"> a) Checking and adjusting clutches. b) Rebuilding pressure plates. c) Relining clutch disks. d) Removing and repairing clutches. 		
8.	Transmission and Differentials	375	600
	<ul style="list-style-type: none"> a) Removing and installing transmissions. b) Testing converters. c) Rebuilding transmission and torque converters. d) Adjusting steering clutches. e) Rebuilding steering clutches. f) Relining steering clutch bands. g) Adjusting and installing ball bearings, Timken bearings, and oil seals. h) Adjusting, inspecting, and replacing differential gears, bearings, and oil seals. 		

9.	Final Drive	300	500
	a) Removing, replacing, and adjusting final drives, axles, gears, bearings, and oil seals.		
	b) Adjusting tracks, wheel bearings, track rollers, and brake lining.		
	c) Repairing, servicing, and adjusting air compressors, brake applicators, boosters, valves, and regulators.		
10.	Hydraulic Systems	525	700
	Repairing and servicing of cylinders, valves, and power control units.		
11.	Welding	450	450
	a) Acetylene - Cutting, brazing, and welding.		
	b) Electric - Cutting and welding.		
12.	Repair and Maintenance of self-propelled and Stationary Equipment (exclusive of engines).	300	550
	a) Use of proper oils, greases, tools, and shop equipment.		
	b) Maintenance and repair of the various types of equipment used by the industry.		
	Total Hours	4000	6000

These schedules are to be considered flexible and may be revised by the JAC to accommodate any condition and may, with the approval of the JAC, be applied interchangeably among the different apprentice classifications.

RELATED INSTRUCTION:

Operating Engineer (Heavy Duty Repairer)

<u>First Year</u>	<u>Approximate Hours</u>
Introduction	20
a) Apprenticeship Rules and Regulations	
b) Local Union Orientation	
c) Issue Books	
d) Drug & Alcohol presentation	
e) Labor History	
f) Diversity	
Safety	4
O.S.H.A. Rules and Regulations	
Commercial Drivers License Preparation	8
a) Testing Requirements	
b) Inspection Stipulations	
c) Driving Course	
Hazmat	40
40 Hour Certification Course	
Fuels and Lubricants	8
a) Fuels, Oils, Grease and Equipment	
b) Grease Truck and Tools	
Health	8
Standard First Aid & CPR	
Basic Equipment Skills (technical training and seat time)	96
a) Forklift and Skidsteer Loader/Dozer	
b) Crane	
c) Backhoe	
d) Dragline	
e) Forklift Certification	
Total Hours	184

<u>Second Year</u>	<u>Approximate Hours</u>
Use of Welding Equipment	24
a) Electric	
b) Acetylene	
Use of Parts Manual	8
Order Parts Pricing	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Technical Training	104
a) Engine Overhaul	
b) Fuel Systems	
c) Electrical Systems	
d) Water Cooling System	
e) Welding	
f) Hydraulics	
Total Hours	144

<u>Third Year</u>	<u>Approximate Hours</u>
Basic Hydraulics	8
Plan reading and Assembly	8
Electrical 6, 12, 24, 36 Volt	
Torque Specs	8
a) Bolt Grading	
b) Material Selection	
Hazmat Re-Certification	8
a) 8 Hour Refresher	
b) Safety Review	
Engine Application	8
a) Gas	
b) Diesel	
Technical Training	104
a) Engine Overhaul	
b) Trouble Shooting	
c) Electrical Systems	
d) Advance Hydraulics	
e) Welding	
f) Final Drives	
Total Hours	144