MASSDOT DIESEL RETROFIT PROGRAM FOR NON-ROAD CONSTRUCTION EQUIPMENT

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Retrofit Specification

- Diesel retrofit specification is contained in each advertised construction contract bid package
- Requires non-road diesel powered equipment be equipped with either a Diesel Oxidation Catalyst (DOC) or a Diesel Particulate Filter (DPF)

Retrofit Options

- Contractors are allowed four options:
  1. latest EPA Tier emission equipment
  2. non-road EPA/CARB verified DOC or DPF
  3. on-road EPA/CARB verified DOC or DPF w/ULSDF
  4. manufacturer certified DOC or DPF

Manufactured Certified Equipment

- DOC Reduction:
  - 20% Particulate Matter
  - 40% Carbon Monoxide
  - 50% Volatile Organic Compounds
- DPF Reduction:
  - 85% Particulate Matter

Specification Exemptions

- **Rental equipment >50 HP (30 day limit)**
- **Large Cranes responsible for critical lift operations (requires technical justification and approval)**
- **Substitute equipment brought onsite to replace a retrofitted piece of equipment (15 day limit)**
- **An emergency situation**

Non-Compliance Penalties

- Must retrofit or remove non-compliant equipment within 15 calendar days
- Contract payments withheld
- $2,500 per day/per equipment

MassDOT's Retrofit Program (2005-2013)

- 1,550 pieces found to be retrofitted state-wide

Label ID No.	District Number	Contract Number	Equipment Type	Equipment Make	Vehicle ID Number
1000	3	45564	Crane	Linkbelt	5215 4345
1001	3	45564	Crane	Manitowoc	810007
1002	3	45564	Backhoe	Caterpillar	CAT0420DPBLN02
1003	3	45564	Loader	Volvo	3049
1004	3	54045	Crane	Mantis	40125
1005	3	54045	Excavator	Komatsu	A83390
1006	3	54045	Loader	Volvo	23868
1007	2	49437	Backhoe	Caterpillar	CAT0430DHB01221
1008	2	49437	Excavator	Koehring	21067
1009	2	49437	Crane	Grove	32696
1010	2	38132	Generator	Air Man	1473A20182
1011	2	38132	Excavator	Caterpillar	CATM322DHW2500192
1012	2	49521	Milling	Wirtgen	6 02 100080340138
1013	2	49521	Roller	Ingersoll	5910
1014	2	49521	Paver	Blawknox	0843 004
1015	2	49521	Paver	Blawknox	5510030 87
1016	2	49521	Paver	Blawknox	0843 004
1017	2	49521	Roller	Galion	59122
1018	2	49521	Roller	Ingersoll/Rand	5994
1019	2	49521	Paver	Blawknox	50004 11
1020	2	52343	Roller	Hypac	109B18802305
1021	2	52343	Dozer	Komatsu	610
1022	2	52343	Loader	Komatsu	A61040
1023	2	52343	Grader	Caterpillar	72V08340
1024	2	49909	Excavator	Caterpillar	CATM322DCW2S00289
1025	2	49909	Loader	John Deere	W2S289
1026	2	49909	Dozer	John Deere	T0450HX932779
1027	2	49909	Crane	Grove	221833
1028	2	54589	Backhoe	Caterpillar	CAT0430DVBML03594
1029	2	54589	Excavator	Volvo	EW170C03408
1030	2	54589	Loader	Caterpillar	HAXX01526
1031	3	51393	Excavator	Volvo	EC290I0003879
1032	3	53567	Excavator	Hitachi	AMD 300090
1033	3	53567	Backhoe	New Holland	31031132
1034	3	54106	Excavator	Caterpillar	CAT0330CCCAP00551
35	3	54106	Excavator	Caterpillar	OCRB01480
1036	3	54106	Excavator	Volvo	EC140V12209
1037	3	54106	Excavator	AK	EW200V02919
1038	3	54106	Excavator	Volvo	EW170C03437
1039	3	54106	Loader	Caterpillar	0DOT00625
1040	3	54106	Loader	Caterpillar	06WS02709

Emission Reduction Benefits

- A reduction of more than 50 tons of PM from retrofitted equipment

EPA Non-Road Particulate Matter Tier Emission Requirement

PM Emission Limits by HP and YR
(grams/brake horsepower hour)

Tier 2 Engine
Tier 3 Engine
Tier 4 Interim Engine
Tier 4 Final Engine

	< 50	50 74	75 99	100 174	175 299	300 599	600 750	> 750
2008	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2009	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2010	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2011	0.22	0.22	0.30	0.22	0.015	0.015	0.015	0.07
2012	0.22	0.22	0.015	0.015	0.015	0.015	0.015	0.07
2013	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07
2014	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07
2015+	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03

NASDI
KOMATSU
PC
360
LC
NASDI
C.N.WOOD

DOC Catalyst
DANGER
STAND CLEAR
OF SWING
AREA!
CAT
325L

DOC Catalyst Muffler
45-060
Milton
EXTEND-A-MAT
CAT
10-20B
WARNING

DOC Catalyst Muffler

DOC Catalyst Muffler

DOC Catalyst
CAT
MassCleanDiesel
MASS HIGHWAY
Inspection Tag No. 1321
LOWER EMISSIONS
950F
SERIES II

Program Goals

- Continue to ensure that non Tier 4 contractor equipment are in compliance with diesel retrofit requirements

Contact Information

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