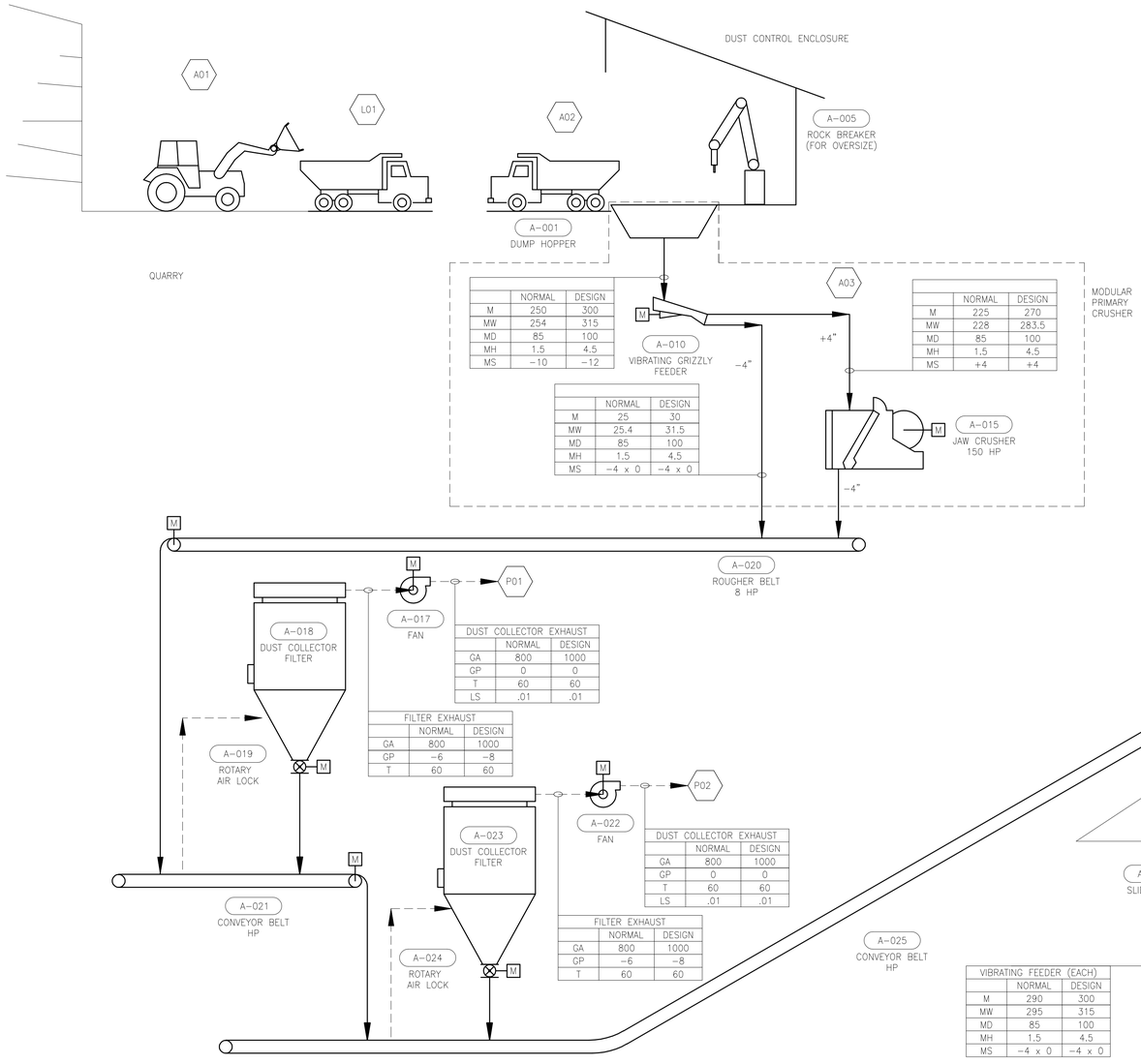

	NORMAL	DESIGN
M	250	300
MW	254	315
MD	85	100
MH	1.5	4.5
MS	−10	−12

	NORMAL	DESIGN
M	225	270
MW	228	283.5
MD	85	100
MH	1.5	4.5
MS	+4	+4

	NORMAL	DESIGN
M	25	30
MW	25.4	31.5
MD	85	100
MH	1.5	4.5
MS	−4 x 0	−4 x 0

DUST COLLECTOR EXHAUST		
	NORMAL	DESIGN
GA	800	1000
GP	0	0
T	60	60
LS	.01	.01

FILTER EXHAUST		
	NORMAL	DESIGN
GA	800	1000
GP	−6	−8
T	60	60

DUST COLLECTOR EXHAUST		
	NORMAL	DESIGN
GA	800	1000
GP	0	0
T	60	60
LS	.01	.01

FILTER EXHAUST		
	NORMAL	DESIGN
GA	800	1000
GP	−6	−8
T	60	60

	NORMAL	DESIGN
M	250	300
MW	254	315
MD	85	100
MH	1.5	4.5
MS	−4 x 0	−4 x 0

VIBRATING FEEDER (EACH)		
	NORMAL	DESIGN
M	290	300
MW	295	315
MD	85	100
MH	1.5	4.5
MS	−4 x 0	−4 x 0

FAN INLET (EACH)		
	NORMAL	DESIGN
GA	500	600
GP	−6	−8
T	60	90

FAN EXHAUST (EACH)		
	NORMAL	DESIGN
GA	500	600
GP	0	0
T	60	90

	NORMAL	DESIGN
M	290	300
MW	295	315
MD	85	100
MH	1.5	4.5
MS	−4 x 0	−4 x 0

LEGEND

EQPMT−NO
DESCRIPTION — EQUIPMENT NUMBER WITH DESCRIPTION

- A — PNEUMATIC OPERATOR
- H — MANUAL OPERATOR
- E — ELECTRIC OPERATOR
- C — COMBUSTION ENGINE
- F — HYDRAULIC OPERATOR
- M — ELECTRIC MOTOR
- G — GRAVITY OPERATOR
- VS — VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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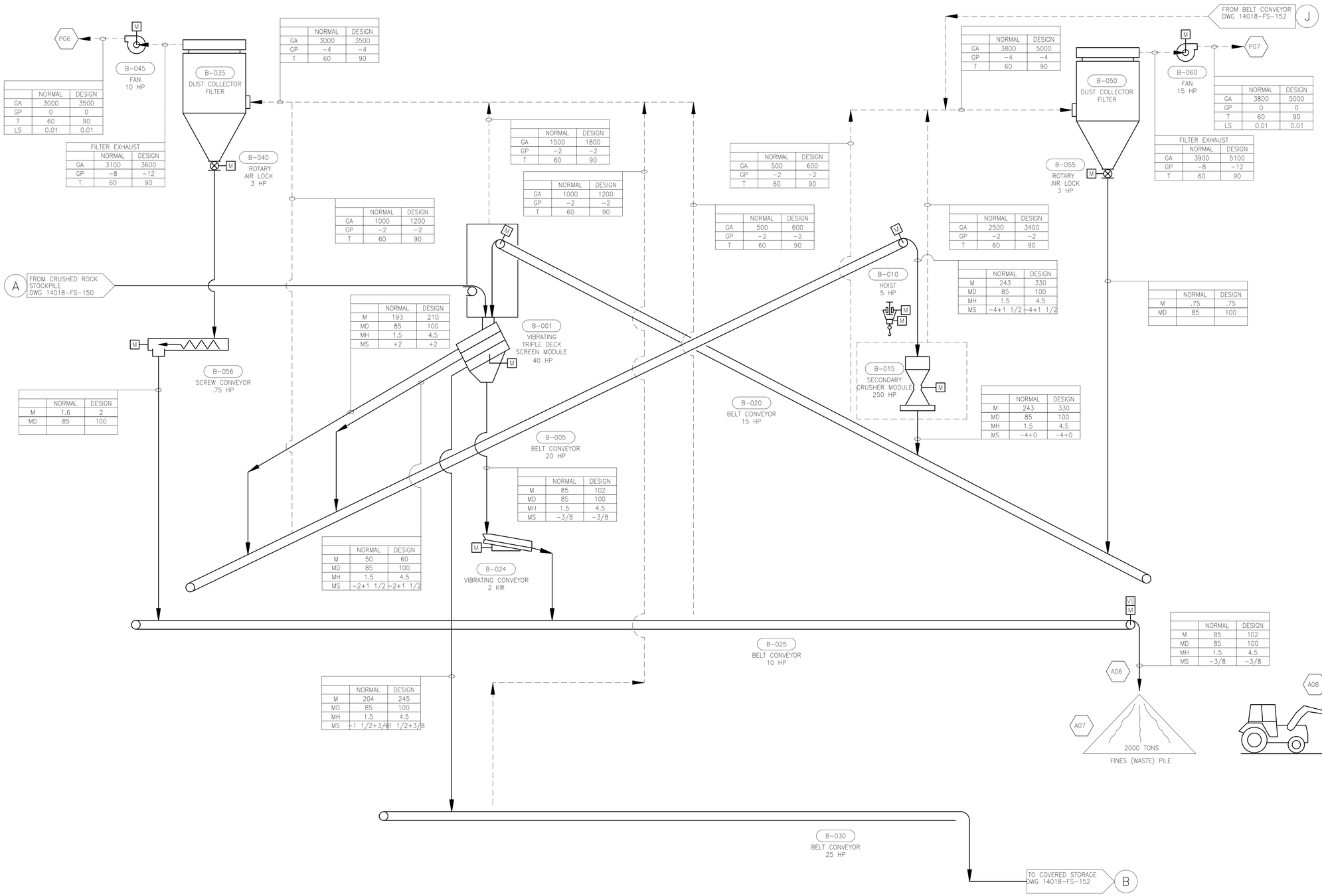
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
PRIMARY CRUSHING

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-150	0



	NORMAL	DESIGN
GA	3000	3500
GP	0	0
T	60	90
LS	0.01	0.01

FILTER EXHAUST	NORMAL	DESIGN
GA	3100	3600
GP	−8	−12
T	60	90

	NORMAL	DESIGN
GA	3000	3500
GP	−4	−4
T	60	90

	NORMAL	DESIGN
GA	1500	1800
GP	−2	−2
T	60	90

	NORMAL	DESIGN
GA	1000	1200
GP	−2	−2
T	60	90

	NORMAL	DESIGN
GA	1000	1200
GP	−2	−2
T	60	90

	NORMAL	DESIGN
GA	500	600
GP	−2	−2
T	60	90

	NORMAL	DESIGN
GA	500	600
GP	−2	−2
T	60	90

	NORMAL	DESIGN
M	193	210
MD	85	100
MH	1.5	4.5
MS	+2	+2

	NORMAL	DESIGN
M	1.6	2
MD	85	100

	NORMAL	DESIGN
M	85	102
MD	85	100
MH	1.5	4.5
MS	−3/8	−3/8

	NORMAL	DESIGN
M	50	60
MD	85	100
MH	1.5	4.5
MS	−2+1 1/2	−2+1 1/2

	NORMAL	DESIGN
M	204	245
MD	85	100
MH	1.5	4.5
MS	−1 1/2+3/4	−1 1/2+3/8

	NORMAL	DESIGN
GA	3800	5000
GP	−4	−4
T	60	90

	NORMAL	DESIGN
GA	3800	5000
GP	0	0
T	60	90
LS	0.01	0.01

FILTER EXHAUST	NORMAL	DESIGN
GA	3900	5100
GP	−8	−12
T	60	90

	NORMAL	DESIGN
GA	2500	3400
GP	−2	−2
T	60	90

	NORMAL	DESIGN
M	243	330
MD	85	100
MH	1.5	4.5
MS	−4+1 1/2	−4+1 1/2

	NORMAL	DESIGN
M	.75	.75
MD	85	100

	NORMAL	DESIGN
M	243	330
MD	85	100
MH	1.5	4.5
MS	−4+0	−4+0

	NORMAL	DESIGN
M	85	102
MD	85	100
MH	1.5	4.5
MS	−3/8	−3/8

LEGEND

EQPMT-NO
DESCRIPTION
EQUIPMENT NUMBER WITH DESCRIPTION

A	PNEUMATIC OPERATOR	H	MANUAL OPERATOR
E	ELECTRIC OPERATOR	C	COMBUSTION ENGINE
F	HYDRAULIC OPERATOR	M	ELECTRIC MOTOR
G	GRAVITY OPERATOR	VS	VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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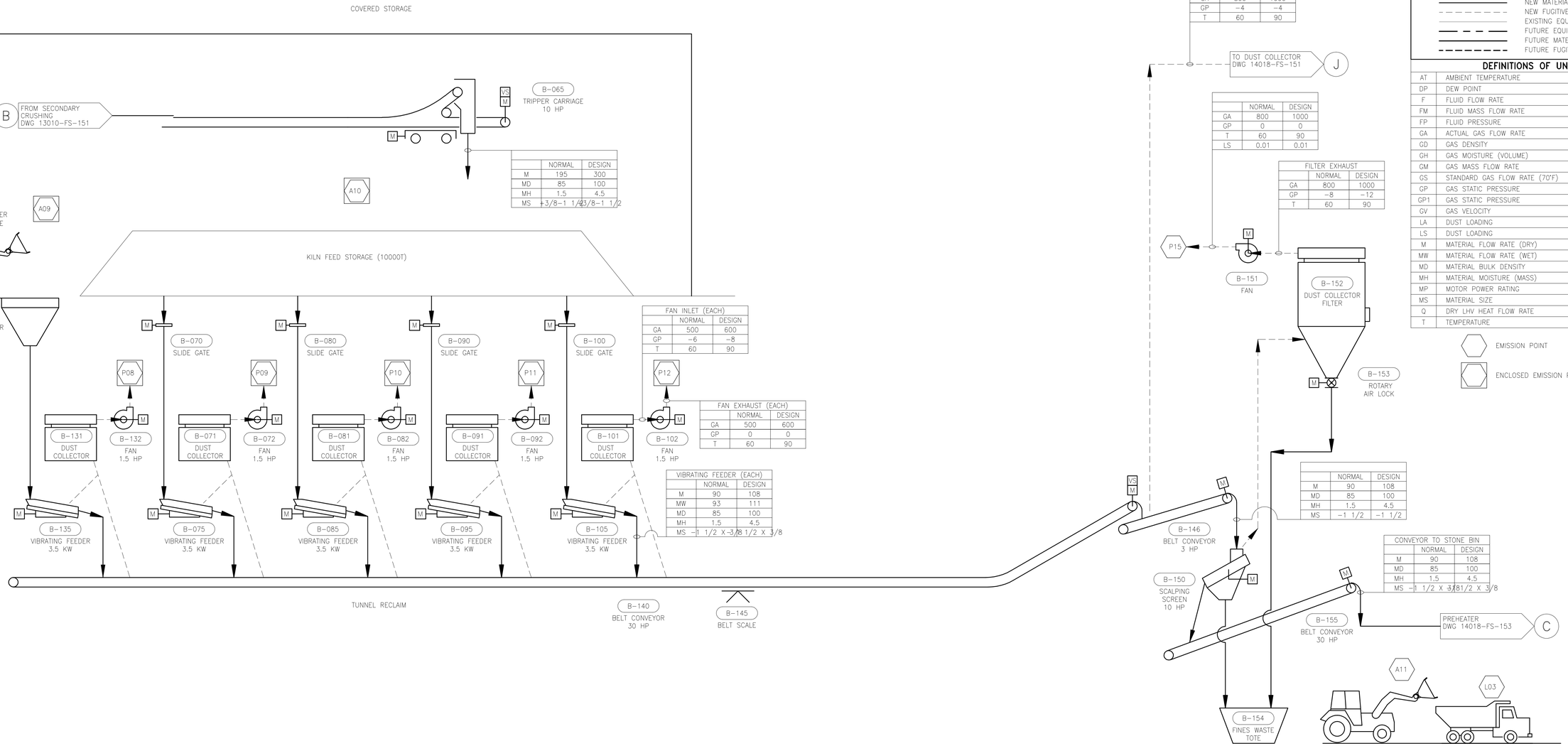
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
SECONDARY CRUSHING

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-151	0



LEGEND

EQPMT-NO
DESCRIPTION
EQUIPMENT NUMBER WITH DESCRIPTION

- A PNEUMATIC OPERATOR
- H MANUAL OPERATOR
- E ELECTRIC OPERATOR
- C COMBUSTION ENGINE
- F HYDRAULIC OPERATOR
- M ELECTRIC MOTOR
- G GRAVITY OPERATOR
- VS VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
LIMESTONE STORAGE AND RECLAIM

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-152	0

LEGEND

(EQPMT–NO) DESCRIPTION — EQUIPMENT NUMBER WITH DESCRIPTION

A	PNEUMATIC OPERATOR	H	MANUAL OPERATOR
E	ELECTRIC OPERATOR	C	COMBUSTION ENGINE
F	HYDRAULIC OPERATOR	M	ELECTRIC MOTOR
G	GRAVITY OPERATOR	VS	VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
– – – – –	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— – — – —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
– – – – –	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

TO KILN BAG HOUSE DWG 14018-FS-155 (D)

PREHEATER EXIT	NORMAL	DESIGN
GA	57250	69600
GS	22500	26500
GP	–23	–27
T	530	550

FROM COVERED STORAGE DWG 14018-FS-152 (C)

KILN FEED RATE	NORMAL	DESIGN
M	30	40
MH	1.5	4.5
MW	30.5	42
MD	85	100

STONE BOX

REDUCER

OVERRUNNING CLUTCH

C-015 EMERGENCY KILN DRIVE 15 HP

C-020 KILN DRIVE 75 HP

C-025 DRIVE COOLING AIR BLOWER 5 HP

C-001A PREHEATER HYDRAULIC PUMP 25 HP
C-001B PREHEATER HYDRAULIC PUMP 25 HP
C-001C PREHEATER HYDRAULIC TANK HTR 3 KW
C-001D PUMP AND FILTER SET 0.5 HP

C-001 PREHEATER

C-005 ROTARY KILN

C-030 KILN SHELL COOLING FAN 15 HP

FAN	NORMAL	DESIGN
GA	60000	60000
GP	1	1
T	60	60
MP	15	15

C-035 NOSE RING FAN 5 HP

C-036 NOSE RING FAN 5 HP

FAN EACH	NORMAL	DESIGN
GA	5000	5000
GP	2	2
T	60	60
MP	5	5

C-050 SLIDE GATE

C-051 SLIDE GATE

C-052 SLIDE GATE

C-053 SLIDE GATE

C-060 VIBRATING FEEDER 7.75 KW

C-061 VIBRATING FEEDER 7.75 KW

C-062 VIBRATING FEEDER 7.75 KW

C-063 VIBRATING FEEDER 7.75 KW

	NORMAL	DESIGN
M	15	18
MD	32	56
T	200	300

C-070 ROUGHER BELT 2 HP

	NORMAL	DESIGN
M	15	18
MD	32	56
T	200	300

C-075 ROLL CRUSHER 20 HP

C-080 BELT CONVEYOR 2 HP

TO COAL MILL DWG 13010-FS-158A/B (H)

COAL RATE (100%)	NORMAL	DESIGN
M	3.3	5.0
MD	50	50
MH	0.5	1.5
GP	30	40
GA	800	1050
GS	700	900
T	160	160

FROM COAL MILL DWG 14018-FS-158 (E)

GAS VALVE TRAIN

NATURAL GAS

NAT. GAS (100%)	NORMAL	DESIGN
GA	1375	1650
GP1	15	120
Q	82.5	100

C-040 BURNER PIPE

C-046 SUPPORT TUBE COOLING FAN 7.5 HP

C-010 LIMESTONE COOLER

C-045 LIME COOLING FAN 75 HP

FAN	NORMAL	DESIGN
GA	14750	18000
GP	+6	+7
T	60	60
MP	25	25

	NORMAL	DESIGN
GA	800	1000
GP	–8	–12
T	180	250

C-085 DUST COLLECTOR

	NORMAL	DESIGN
GA	800	1000
GP	0	0
T	180	250
LS	0.01	0.01

C-095 FAN 3 HP

P16

C-090 ROTARY AIRLOCK 3 HP

TO SCREEN TOWER BUCKET ELEVATOR DWG 14018-FS-154 (F)

COMPRESSED AIR SERVICE

C-565 AIR COMPRESSOR 100 HP

C-570 AIR COMPRESSOR 100 HP

C-580 AIR RECEIVER

C-575 AIR DRYER

C-515 FIRE PUMP 25 HP

C-520 CHECK VALVE

C-535 BALL VALVE

C-530 PUMP 25 HP

C-525 BALL VALVE

C-555 COOLING FAN 5 HP

C-550 BALL VALVE

C-545 STANDBY PUMP 25 HP

C-540 BALL VALVE

C-560 STANDBY COOLING FAN 5 HP

FROM PLANT PROCESS

TO PLANT PROCESS

C-510 WATER TANK

C-505 DEEP WELL PUMP 25 HP

C-500 DIESEL EMERGENCY GENERATOR

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

Phoenix Process Engineering, Inc.
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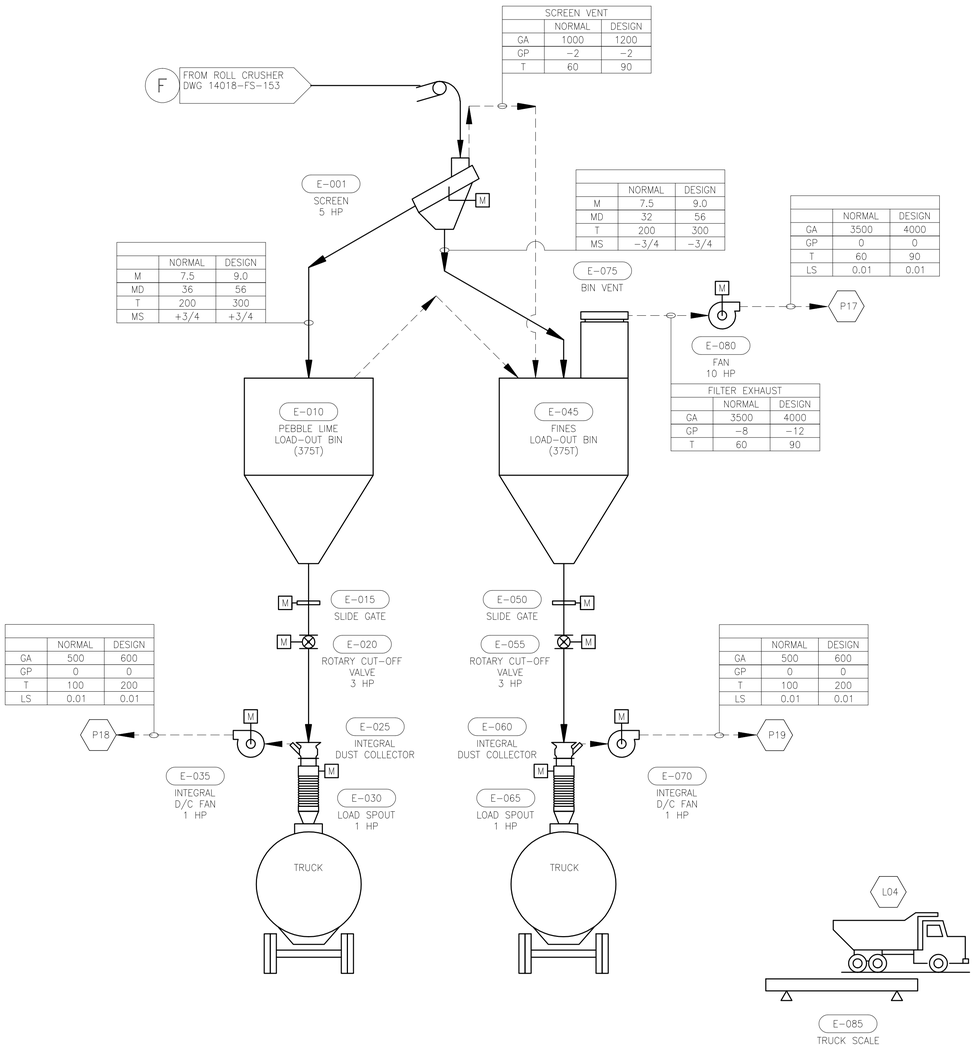
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM 350 TPD LIME PLANT KILN FEED

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-153	0



LEGEND

EQPMT-NO
DESCRIPTION
EQUIPMENT NUMBER WITH DESCRIPTION

- A — PNEUMATIC OPERATOR
- H — MANUAL OPERATOR
- E — ELECTRIC OPERATOR
- C — COMBUSTION ENGINE
- F — HYDRAULIC OPERATOR
- M — ELECTRIC MOTOR
- G — GRAVITY OPERATOR
- VS — VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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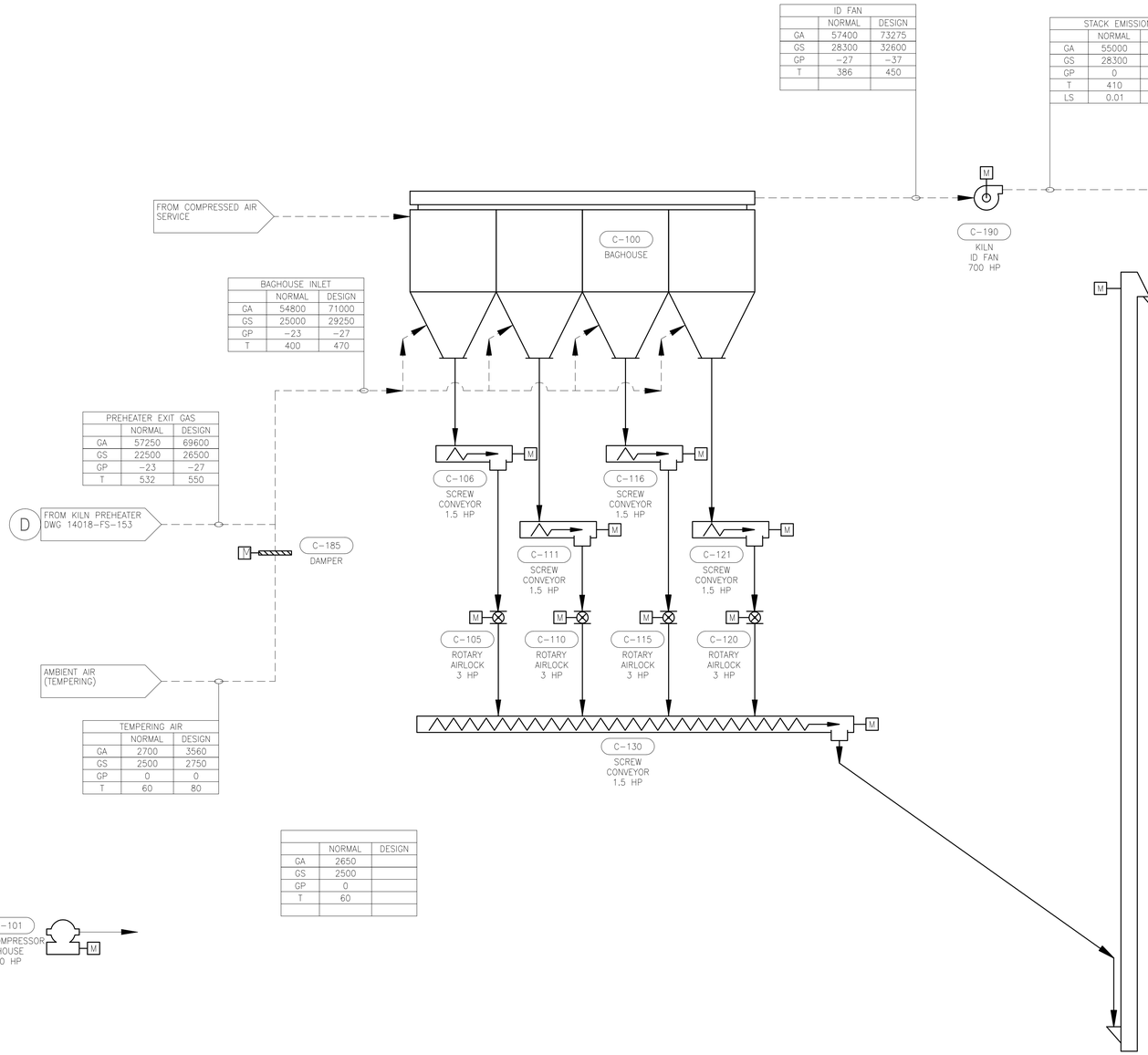
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
TRUCK LOAD OUT

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-154	0



ID FAN	NORMAL	DESIGN
GA	57400	73275
GS	28300	32600
GP	-27	-37
T	386	450

STACK EMISSION	NORMAL	DESIGN
GA	55000	68700
GS	28300	32600
GP	0	0
T	410	486
LS	0.01	0.01

BAGHOUSE INLET	NORMAL	DESIGN
GA	54800	71000
GS	25000	29250
GP	-23	-27
T	400	470

PREHEATER EXIT GAS	NORMAL	DESIGN
GA	57250	69600
GS	22500	26500
GP	-23	-27
T	532	550

TEMPERING AIR	NORMAL	DESIGN
GA	2700	3560
GS	2500	2750
GP	0	0
T	60	80

	NORMAL	DESIGN
GA	2650	
GS	2500	
GP	0	
T	60	

	NORMAL	DESIGN
GA	1000	1250
GP	-8	-12
T	250	275

	NORMAL	DESIGN
M	2.9	3.5
MD	30	40
T	200	300

	NORMAL	DESIGN
GA	1000	1250
GP	0	0
T	250	273
LS	0.01	0.01

	NORMAL	DESIGN
GA	500	600
GP	0	0
T	200	300
LS	0.01	0.01

	NORMAL	DESIGN
M		
MD		
T		

LEGEND

EQPMT-NO
DESCRIPTION
EQUIPMENT NUMBER WITH DESCRIPTION

- A PNEUMATIC OPERATOR
- H MANUAL OPERATOR
- E ELECTRIC OPERATOR
- C COMBUSTION ENGINE
- F HYDRAULIC OPERATOR
- M ELECTRIC MOTOR
- G GRAVITY OPERATOR
- VS VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/25/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
1	CORRECTED FAN AND STACK FLOW	9-25-2014	BJH	JDM
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
KILN BAG HOUSE

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-155	1

LEGEND

EQPMT–NO
DESCRIPTION — EQUIPMENT NUMBER WITH DESCRIPTION

A	PNEUMATIC OPERATOR	H	MANUAL OPERATOR
E	ELECTRIC OPERATOR	C	COMBUSTION ENGINE
F	HYDRAULIC OPERATOR	M	ELECTRIC MOTOR
G	GRAVITY OPERATOR	VS	VARIABLE SPEED

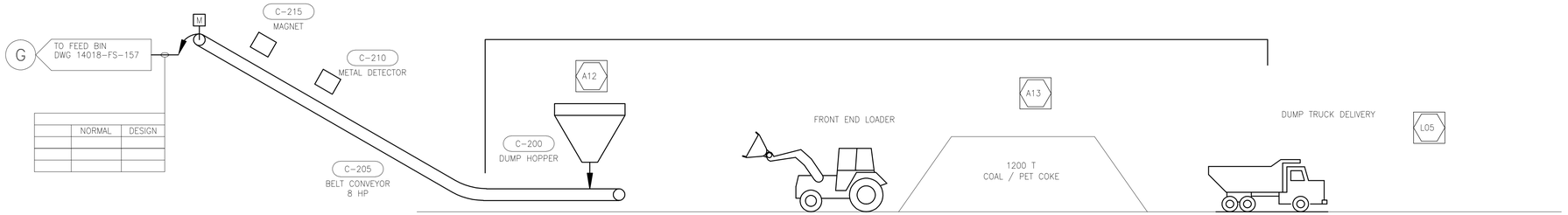
LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
– – – – – – –	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— – – —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
– – – – – –	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
MW	MATERIAL FLOW RATE (WET)	stph
MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT



	NORMAL	DESIGN

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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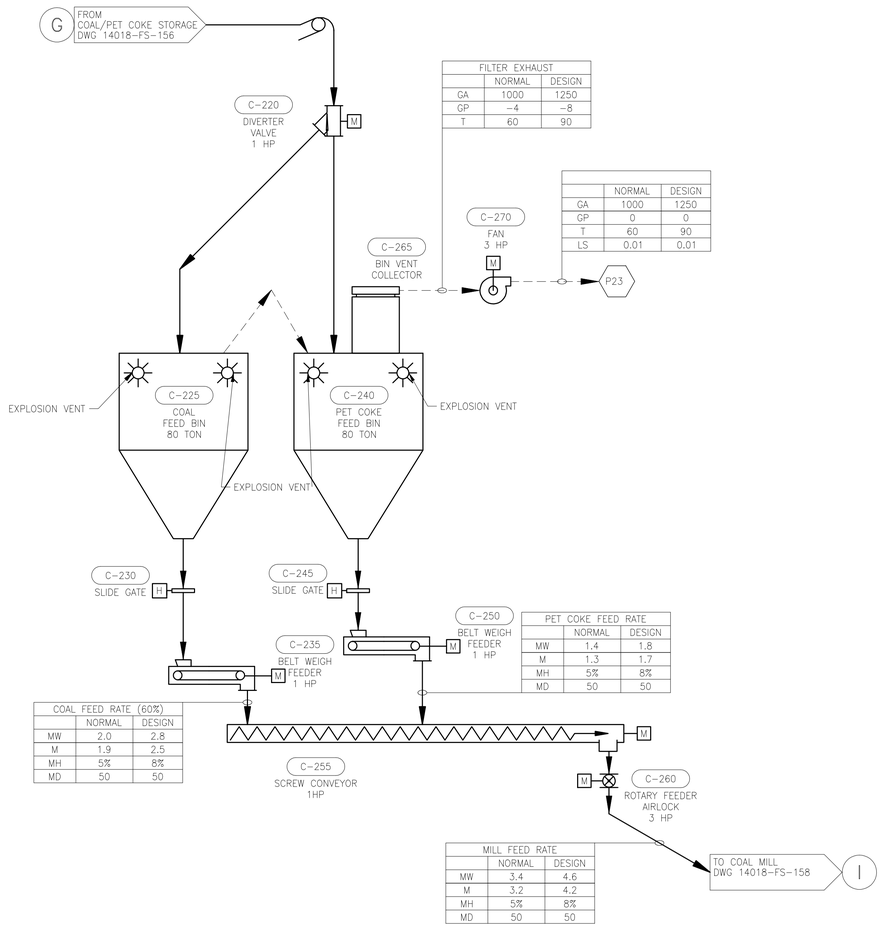
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
COAL/PET COKE STORAGE AND RECLAIM

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-156	0



FILTER EXHAUST		
	NORMAL	DESIGN
GA	1000	1250
GP	-4	-8
T	60	90

	NORMAL	DESIGN
GA	1000	1250
GP	0	0
T	60	90
LS	0.01	0.01

PET COKE FEED RATE		
	NORMAL	DESIGN
MW	1.4	1.8
M	1.3	1.7
MH	5%	8%
MD	50	50

COAL FEED RATE (60%)		
	NORMAL	DESIGN
MW	2.0	2.8
M	1.9	2.5
MH	5%	8%
MD	50	50

MILL FEED RATE		
	NORMAL	DESIGN
MW	3.4	4.6
M	3.2	4.2
MH	5%	8%
MD	50	50

LEGEND

(EQPMT-NO) DESCRIPTION — EQUIPMENT NUMBER WITH DESCRIPTION

- [A] PNEUMATIC OPERATOR
- [H] MANUAL OPERATOR
- [E] ELECTRIC OPERATOR
- [C] COMBUSTION ENGINE
- [F] HYDRAULIC OPERATOR
- [M] ELECTRIC MOTOR
- [G] GRAVITY OPERATOR
- [VS] VARIABLE SPEED

LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
———	NEW MATERIAL FLOW
- - - - - - - - -	NEW FUGITIVE DUST COLLECTION
———	EXISTING EQUIPMENT & FLOW
— — — —	FUTURE EQUIPMENT
———	FUTURE MATERIAL FLOW
- - - - - - - - -	FUTURE FUGITIVE DUST COLL.

DEFINITIONS OF UNITS

AT	AMBIENT TEMPERATURE	°F
DP	DEW POINT	°F
F	FLUID FLOW RATE	gpm
FM	FLUID MASS FLOW RATE	lb/min
FP	FLUID PRESSURE	psi
GA	ACTUAL GAS FLOW RATE	acfm
GD	GAS DENSITY	lb/ft3
GH	GAS MOISTURE (VOLUME)	%
GM	GAS MASS FLOW RATE	lb/min
GS	STANDARD GAS FLOW RATE (70°F)	scfm
GP	GAS STATIC PRESSURE	in WG
GP1	GAS STATIC PRESSURE	psi
GV	GAS VELOCITY	ft/min
LA	DUST LOADING	gr/acf
LS	DUST LOADING	gr/scf
M	MATERIAL FLOW RATE (DRY)	stph
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MD	MATERIAL BULK DENSITY	lb/ft3
MH	MATERIAL MOISTURE (MASS)	%
MP	MOTOR POWER RATING	hp
MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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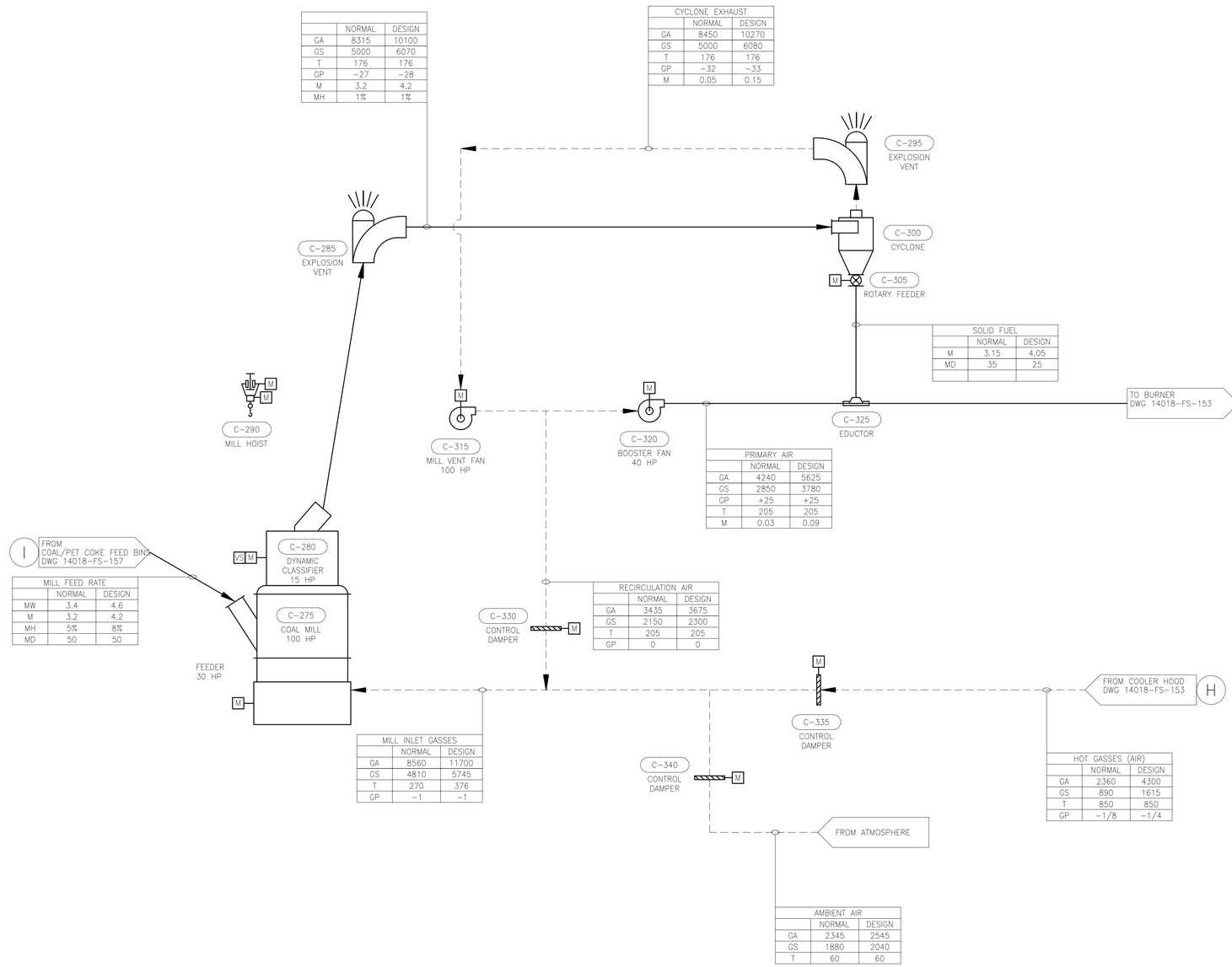
CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM
350 TPD LIME PLANT
COAL/PET COKE STORAGE AND RECLAIM

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-157	0



	NORMAL	DESIGN
GA	8315	10100
GS	5000	6070
T	176	176
GP	-27	-28
M	3.2	4.2
MH	1%	1%

CYCLONE EXHAUST		
	NORMAL	DESIGN
GA	8450	10270
GS	5000	6080
T	176	176
GP	-32	-33
M	0.05	0.15

SOLID FUEL		
	NORMAL	DESIGN
M	3.15	4.05
MD	35	25

PRIMARY AIR		
	NORMAL	DESIGN
GA	4240	5625
GS	2850	3780
GP	+25	+25
T	205	205
M	0.03	0.09

MILL FEED RATE		
	NORMAL	DESIGN
MW	3.4	4.6
M	3.2	4.2
MH	5%	8%
MD	50	50

RECIRCULATION AIR		
	NORMAL	DESIGN
GA	3435	3675
GS	2150	2300
T	205	205
GP	0	0

MILL INLET GASSES		
	NORMAL	DESIGN
GA	8560	11700
GS	4810	5745
T	270	376
GP	-1	-1

HOT GASSES (AIR)		
	NORMAL	DESIGN
GA	2360	4300
GS	890	1615
T	850	850
GP	-1/8	-1/4

AMBIENT AIR		
	NORMAL	DESIGN
GA	2345	2545
GS	1880	2040
T	60	60

LEGEND

EQPMT-NO
DESCRIPTION
EQUIPMENT NUMBER WITH DESCRIPTION

- A PNEUMATIC OPERATOR
- H MANUAL OPERATOR
- E ELECTRIC OPERATOR
- C COMBUSTION ENGINE
- F HYDRAULIC OPERATOR
- M ELECTRIC MOTOR
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LINE STYLES	LINE DEFINITIONS
———	NEW EQUIPMENT
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DEFINITIONS OF UNITS

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MS	MATERIAL SIZE	in
Q	DRY LHV HEAT FLOW RATE	10^6 Btu/hr
T	TEMPERATURE	°F

EMISSION POINT

ENCLOSED EMISSION POINT

RELEASED FOR PERMIT
DATE: 9/12/2014 BY: JTC

REV	DESCRIPTION	DATE	DSGNR	MGR
0	RELEASED FOR PERMIT	9-12-2014	JTC	JDM

DRN. BY: JTC
SCALE: NONE
PROJECT NO: 14018

STATUS: PERMIT

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CLIENT: MONTANTA LIMESTONE, LLC
PROJECT: NEW LIME PLANT – PHASE II
LOCATION: DRUMMOND, MONTANA
DWG NAME: FLOW DIAGRAM 350 TPD LIME PLANT COAL MILL

DATE	DRAWING NUMBER	REVISION
08-12-2014	14018-FS-158	0