

Notice of Alteration Form



Client File No. : 5581.00	Environment Act Licence No. : 3056
Legal name of the Licencee: Custom Castings Limited	
Name of the development: Custom Castings	
Category and Type of development per Classes of Development Regulation: Manufacturing Foundries	
Licencee Contact Person: Roger Dack Mailing address of the Licencee: 2015 Dugald Road City: Winnipeg Province: Manitoba Postal Code: R2J0H3 Phone Number: (204) 663-9142 Fax: (204) 663-9099 Email: safecccl@customcastings.com	
Name of proponent contact person for purposes of the environmental assessment (e.g. consultant):	
Phone:	Mailing address:
Fax:	
Email address:	
Short Description of Alteration (max 90 characters): 1. Decommission and remove gas fired furnace, and 2. Move sand core production machines.	
Alteration fee attached: Yes: <input type="checkbox"/> No: <input checked="" type="checkbox"/>	
If No, please explain: These changes will 1. Reduce greenhouse gas emissions, and 2. will improve our production efficiency. +	
Date: 2018-05-30	Signature: Printed name: Roger Dack
<p>A complete Notice of Alteration (NoA) consists of the following components:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cover letter <input type="checkbox"/> Notice of Alteration Form <input type="checkbox"/> 2 hard copies and 1 electronic copy of the NoA detailed report (see "Information Bulletin - Alteration to Developments with Environment Act Licences") <input type="checkbox"/> \$500 Application fee, if applicable (Cheque, payable to the Minister of Finance) 	
<p>Submit the complete NoA to:</p> <p>Director Environmental Approvals Branch Manitoba Sustainable Development 1007 Century Street Winnipeg, Manitoba R3H 0W4</p> <p>For more information:</p> <p>Phone: (204) 945-8321 Fax: (204) 945-5229 http://www.gov.mb.ca/sd/eal</p>	
<p>Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")</p>	



May 30, 2018

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

Dear Director,

This letter is to notify the director of our intention to proceed with upgrade projects #18 and #27.

In our upgrade plan, Table 5-1R2, project #18 (see attached) we wish to proceed with decommissioning of gas fired furnace #7 on June 6, 2018. Once decommissioned we will be removing said furnace from our facility and will not be replacing it. This will leave us with one remaining gas fired furnace to replace or decommission, per our upgrade plan.

Also in our upgrade plan, Table 5-1R2, project #27 (see attached) we wish to proceed with relocating our sand core production equipment to the area formerly occupied by Furnace #7. This allows us to group our sand core processes to increase the efficiency of our core making and capture of emissions.

In Document 20180530-CoreMachineRelocation.docx figure 1-1 shows the current areas within our facility where sand cores are produced and used. Figure 1-2 shows where we are moving sand core production. The goal is to eliminate waste in our process in order to enable us to use two core machines instead of three. We will then be able to better contain our emissions and direct them to the applicable stack.

During the move of the core making equipment we plan to upgrade the fume hoods, see attached documents **2017-002-01 custom castings cell 4 M2 HARRISON HOO.PDF** and **2017-002-01 custom castings cell 4 M3 SF-10 HOOD.pdf** for specs. Attached document **2017-002-01 custom castings cell 4 M-1 HARRISION A.PDF** shows how the core making equipment will be ducted up and out of the building similar to the current location.

We look forward to your approval.

If you have any concerns or questions, please contact me at (204)663-9142 x:245

Regards,

A handwritten signature in black ink that reads "R. Dack". The signature is written in a cursive, slightly slanted style.

Roger Dack
Environment, Health and Safety Coordinator

[CONSIDER IT DONE]

Custom Castings Ltd.

2015 Dugald Rd.
Winnipeg, MB
Canada, R2J 0H3

P 204 663 9142
E main@customcastings.com

customcastings.com

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
10	31-Aug-12	<ul style="list-style-type: none"> •Improve frequency of filter replacement in fume hoods. •Linked to Project No. 13 below. 	Complete	Pre-licensing (2012) frequency of flat-filter replacement dictated by when they clogged sufficiently to increase opacity in air accumulated within the hood ** Post-licensing filter-change frequency (Photo 1) now monthly; mass of particulate filtered out of atmospheric emissions is tracked (Table 1).	Jun-14
11	31-Oct-12	<ul style="list-style-type: none"> •Improve emissions capture at source from sand-core stations; install new fume hoods. 	Complete	High operating temperatures (1350°F) at furnaces causes highest rate of resin volatilization. Creating new fume hoods will increase capture from each casting station. **After investigation, it was decided to capture the fumes at source as localized collection is more effective than general collection. Fume-collection shrouds now installed on individual tooling (Fig. 5-2R1).	May-13
12	30-Nov-12	<ul style="list-style-type: none"> •Reduce number of open windows (and their room-air extraction fans). 	Complete	Improved air supply to worker stations near heat sources (e.g., furnaces) has reduced need for these windows.	Oct-14
13	30-Nov-12	<ul style="list-style-type: none"> •Improve performance of station-specific air filters in fume hoods 	Complete	1st trial proved ineffective. 2nd trial based on installation of filter boxes with replaceable filter media (Fig. 5-2R1). Mass of particulate filtered out of atmospheric emissions is tracked monthly (Table 1). •2 Mar 2015; filter change and tracking frequency increased to weekly (Table 1).	May-14
14	30-Nov-12	<ul style="list-style-type: none"> •Increase exit velocity of applicable stack emissions. 	Complete	Have inserted on-line axial-flow booster fans at the base of applicable stacks. This improvement will increase atmospheric mixing and dispersion.	Sep-12

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
15	28-Feb-13	<ul style="list-style-type: none"> Route "Smoke Eater" box flue at Furnace 10 into stack above gas-fired Furnace 9 to encourage oxidation of volatiles inside stack during ascent; decommission existing Smoke Eater stack. 	Complete	Smoke Eater Box emissions at Furnace 10 that exited building in 2012 from smallest diameter and shortest stack, between two buildings (encouraging fumigation of northern neighbours) has been decommissioned and stack has been removed....	Feb-13
16	30-Nov-15	<ul style="list-style-type: none"> Ensure emissions capture at source of new (Harrison) sand-core casting machine. 	Cancelled	<p>Low operating temperatures (400°F) at core making stations causes low rate of resin volatilization. Fume hoods at two existing stations capture emissions from each furnace. Decommission old SF-6 machine use the existing hood for the Harrison.</p> <p>**Old SF6 machine will be retained due to capacity requirements. Getting quotes on building and installing fume hood for the Harrison machine.</p> <p>~~Project cancelled. Improved emissions capture will be rolled into and a component of Project #27</p>	
17	31-Dec-16	<ul style="list-style-type: none"> Increase the height of applicable roof-line stacks. 	Active	<p>Goal is to raise stack height by ~5 m. Will increase atmospheric mixing and dispersion.</p> <p>** Moved forward from Phase 2 into Phase 1.</p> <p>**Increased the height of 3 stacks at the shell core process on May 30, 2013 (Fig. 5-2R1).</p> <p>**Furnaces 7 through 10 will not have stacks raised. (See Phase 4 Proj. No. 29)</p> <p>**General ventilation exhaust ports will not be raised. (See Phase 4 Proj. No. 30).</p> <p>**2 stacks, at M4 & M5, Will see their heights increased by Q4 2016.</p> <p>•Sep 2016; Furnaces M4 & M5 have been re-named T13-F1 and T13-F2.</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
18	31-May-19	<ul style="list-style-type: none"> • Replace last four gas-fired furnaces with new electric furnaces, and in so doing, reduce the number of point sources at the roof. 	Active	<p>Will occur as part of the continuing replacement of gas-fired ceramic-crucible furnaces, at a rate of approximately 1 per year. Gas-fired furnaces lose 1.3 M BTU/hr each, cause 11% evaporative loss of molten aluminum, have larger footprint and make more noise.</p> <p>** Furnace #6 decommissioned June 30 2014. Electric replacement furnace is awaiting installation.</p> <ul style="list-style-type: none"> •Feb 18, 2016; Gas furnace #8 decommissioned. Three gas fired furnaces remain, next replacement scheduled for Q3 2017 •Feb 22, 2017; Gas furnace #9 decommissioned. Two gas fired furnaces remain, next decommissioning possibly Q2 or Q3 of 2017. •June 6, 2018; Gas furnace #7 to be decommissioned. 	
19		<ul style="list-style-type: none"> •Add stack-top venturi (Bernoulli) collars to all raised stacks, to increase emissions exit velocities. 	Complete	<p>Increased exit velocities increases atmospheric mixing and dispersion.</p> <p>**Moved forward from Phase 2 into Phase 1.</p> <p>**Three raised stacks have had stack-top venturis installed.</p>	May-13
20	31-May-15	<ul style="list-style-type: none"> •Install two Filtermist "S" series oil mist filter on Mazak CNC lathes. One located in the pulley cell and one in CNC department. 	Complete	To reduce oil mist emissions from applicable CNC equipment.	Jun-14
21	TBD	<ul style="list-style-type: none"> •Recycle all/most spent sand now being disposed of by BFI. 	On Hold	<p>Seeking opportunities for recycling into asphalt, roadbed materials, landfill daily soil cover, etc.</p> <p>** Seeking/evaluating opportunity with municipal landfill operator.</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
22	31-May-17	<ul style="list-style-type: none"> Use localized inert-gas blanket as constraint on air access to the molten aluminum. 	Cancelled	<p>Very expensive, and incremental improvement over current constraints of air access (needed for product quality) would be minimal. Easier and more logical to capture emissions at source than to deny air access to molten metal bath.</p> <p>** Moved forward from Phase 4</p> <p>**May be possible on Schaefer furnace</p> <p>~~Upon further review the project is impractical and is cancelled.</p>	
23		<ul style="list-style-type: none"> Use emissions-dispersion model to benchmark current airshed quality and predict extent of improvement from potential mitigation measures. 	Cancelled	<p>Could be used to quantify extent of benefit from increased stack heights, but such quantification is less important than increasing the heights.</p> <p>** Moved to Phase 4.</p> <p>~~Cancelled</p>	
24		<ul style="list-style-type: none"> Install wet scrubbers to capture waste heat, TSP and soluble aromatics. 	Cancelled	<p>Adds complexity to address extreme thermodynamics of the heat-recovery loop, and is very expensive. Creates additional challenges for storage and disposal of captured solids/sludge. Adds to noise dissemination.</p> <p>** Moved to Phase 4.</p> <p>~~Cancelled</p>	
25		<ul style="list-style-type: none"> Treat all/most emissions (after heat exchange) in BioFilter. 	Cancelled	<p>Successful year-round (low-temperature) system operating at nearby Palliser Furniture, but heat-removal requirements to allow this type of emissions treatment would be complex and expensive.</p> <p>** Moved to Phase 4.</p> <p>~~Cancelled</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
26		<ul style="list-style-type: none"> • Install Thermal Oxidizers to oxidize aromatic hydrocarbons in emissions. 	Cancelled	<p>Very expensive, but could fit with plan to install new furnace, fired by adjacent furnace emissions (T=1700°F) to briquet and melt aluminum shavings (now sold to recyclers; Chisick) for recovery in ingot.</p> <p>** Plan to remove gas-fired furnaces eliminates this action as a possibility. Moved to Phase 4.</p> <p>~~Cancelled</p>	
27	30-Dec-19	<ul style="list-style-type: none"> • Reconfigure shop floor to facilitate improved manifolding of all point sources of malodorous emissions. 	Active	<p>Expensive, very disruptive to already stressed production, and less likely to be effective than other measures now committed to.</p> <p>** Moved to Phase 4.</p> <p>~~Upon review this project may have a significant positive effect on our neighbours concerns. Currently determining cost and time line to implement.</p> <p>+Created cellular transition plan (CTP). CTP will allow us to group all of our sand core processes to improve our capture of emissions.</p>	
28		<ul style="list-style-type: none"> • Install dosimeters upstream and downstream of site to supplement indoor air monitoring. 	Cancelled	<p>Certainty of access, vulnerability to vandalism and multiple other sources makes this problematic.</p> <p>** Moved to Phase 4.</p> <p>~~Cancelled</p>	
29		<ul style="list-style-type: none"> • Improve sealing of entire building. 	Cancelled	<p>Expensive, and less likely to be effective than other measures now committed to, and largely irrelevant as the essential exothermy of the plant means it is under negative pressure most of the year.</p> <p>~~Cancelled</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
30		• Raise stacks at furnaces 7 through 10	Cancelled	Expensive and conflicts with the plan to eliminate all gas-fired furnaces. **Moved to Phase 4. ~~Cancelled	
31		• Raise general ventilation ports ~5 m	Cancelled	Very expensive. Easier and more logical to capture emissions at the source. **Moved to Phase 4. ~~Cancelled	
32	11-Feb-16	•Improve particulate capture by using improved filter media.	Complete	New Project (25 Aug 2015) Previous filter material is PS100D with a Arrestance of 75-80% Proposed filter media is PROTEK BLUE with a Arrestance is 80%-85% •21 Sep 2015; Conservation MB was notified of testing improved filter media. •17 Nov 2015; Testing complete. •11 Feb 2016; NoA sent to MB Conservation.	11-Feb-16
33	31-Aug-16	•Evaluate reduced emissions sand core sand.	Complete	New Project (5 May 2016) Aquire HA International's Custom Coat E-Series sand, conduct operational testing. •5 May 2016; CWS was notified of our intent to conduct operational testing of this new sand. •29 Jun 2016; Testing concluded, operational testing sucessful. Decision made to switch to E-Series sand. •6 Jul 2016; CWS notified of successful testing and of our decision to proceed with the new E-Series sand.	8-Aug-16

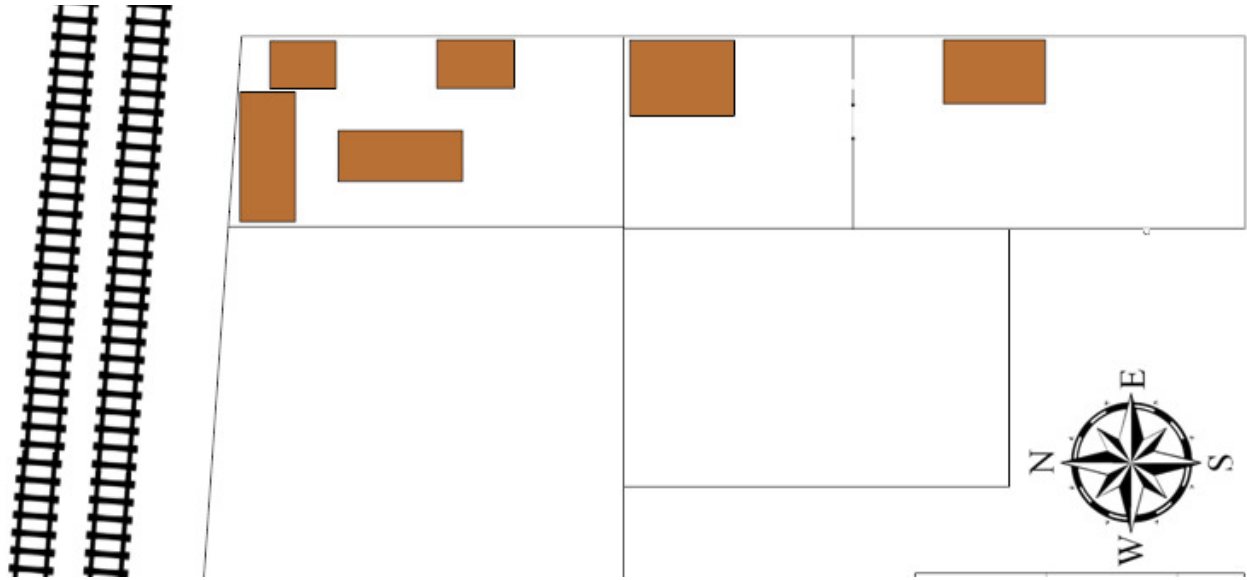


Fig 1-1

Brown squares indicate areas where sand cores are made or used.

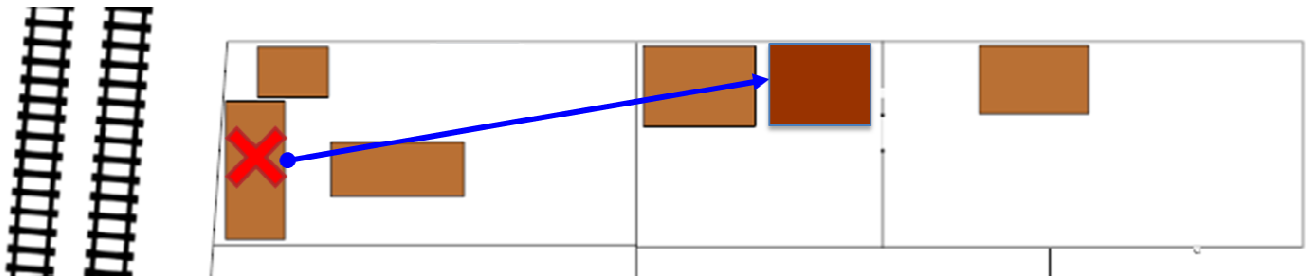
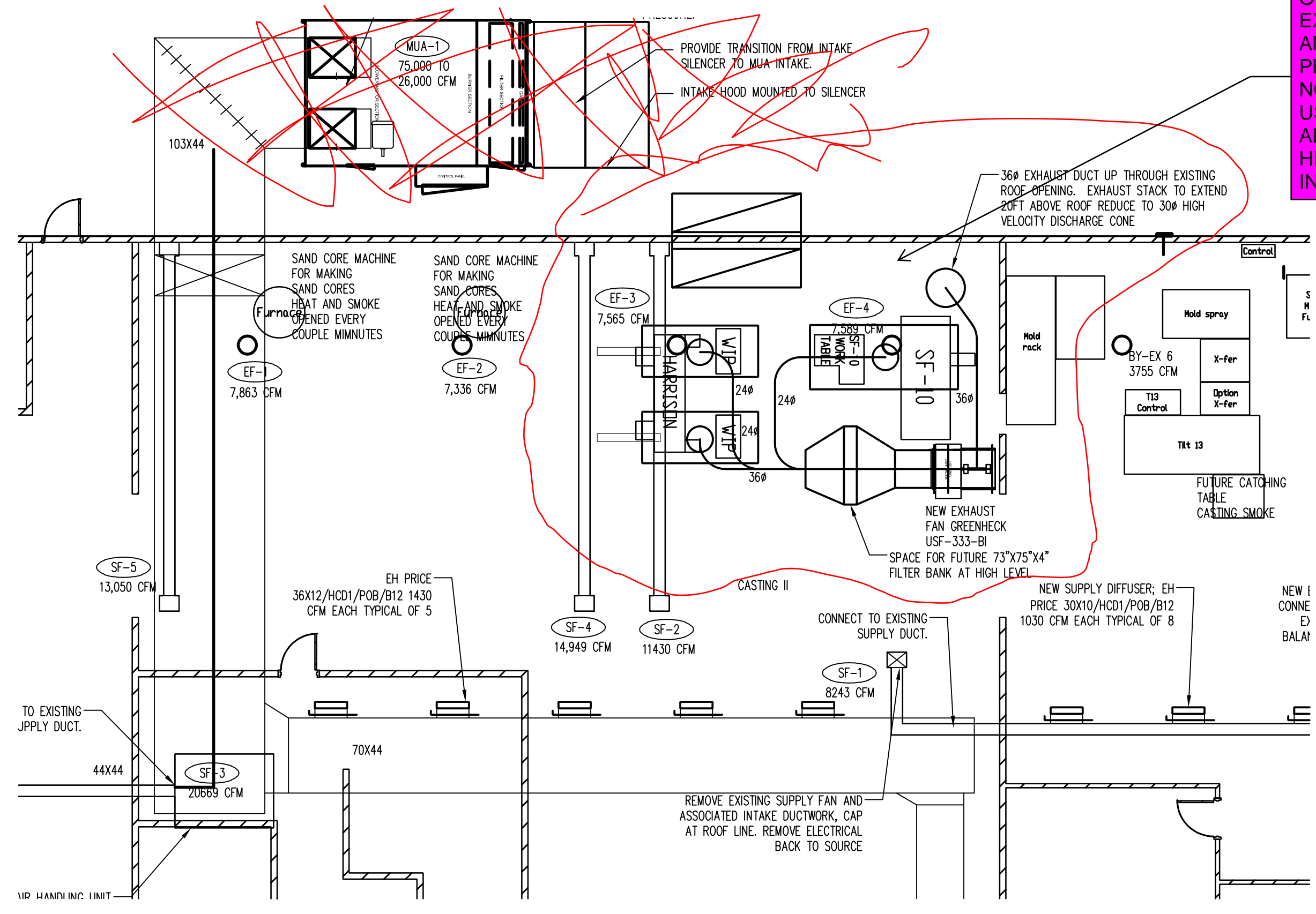


Fig 1-2

Blue arrow shows where sand core production equipment will be moved to.



THIS SCOPE ONLY - LEAVE EXISTING EF-3 AND EF-4 IN PLACE FOR NOW - CAN BE USED FOR ADDITIONAL HEAT REMOVAL IN SUMMER.

- GENERAL NOTES:**
- A. DO NOT SCALE DRAWING.
 - B. CONTRACTOR SHALL CONFIRM THE LOCATION AND ROUTE OF ALL NEW AND EXISTING EQUIPMENT, PIPING AND DUCTWORK ON SITE.
 - C.
 - D.
 - E.

DRAWING NOTES:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

FAN SCHEDULE

Mark	Quantity	Model	Wheel Diameter (in.)	Requested Volume (CFM)	Total Volume (CFM)	External SP (in. wg)	External TP (in. wg)	Total TP (in. wg)	Fan Speed (RPM)	Tip Speed (ft/min)	Outlet Velocity (ft/min)	Operating Power (hp)	Operating Power (dBA)	Inlet Size (Sones)	Motor Size (hp)	Comments
F-1	1	USF-333-10-BI-100	33	14,500	14,500	2.5			925			8.89	77	28	10	VFD rated motor

7				
6				
5				
4				
3				
2				
1				
0				
REV	DESCRIPTION	OWN	APP	REV DATE

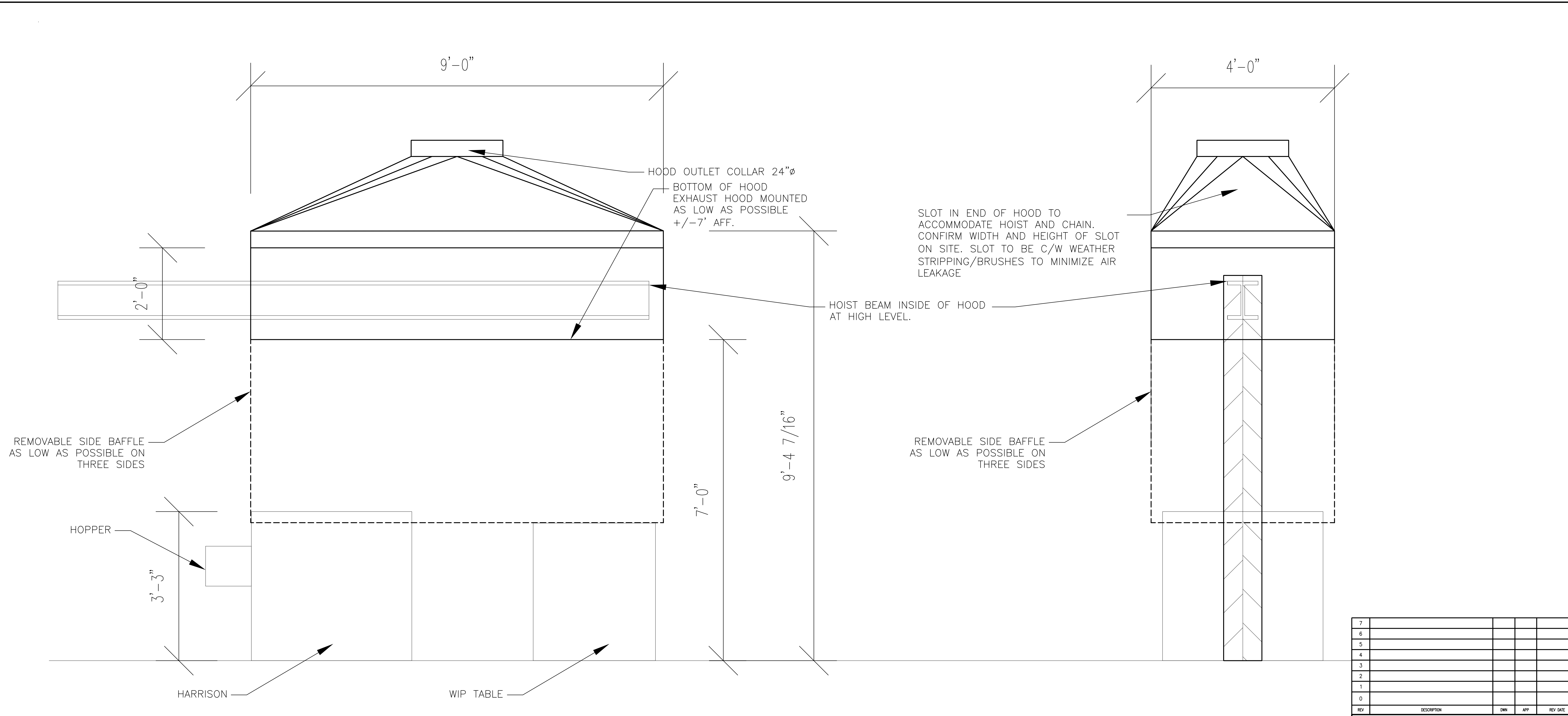
ENG. SEAL

GMECH ENGINEERING
G-MECH Engineering Inc.
 29 Oakmont Crescent
 Headingley, Manitoba R4H 1J4
 phone: (204) 888-8992
 info@g-mechengineering.com

CUSTOM CASTINGS
CELL 2 HARRISON AND SF-10

SHEET TITLE
PART FLOOR PLAN

DRAWN BY GW	CHECKED BY GW	SCALE AS NOTED	SHEET NO. M-1
DESIGNED BY GW	PROJECT NO.	SCALE AS NOTED	



HARRISON – EXHAUST HOOD TYP OF TWO

7				
6				
5				
4				
3				
2				
1				
0				
REV	DESCRIPTION	OWN	APP	REV DATE

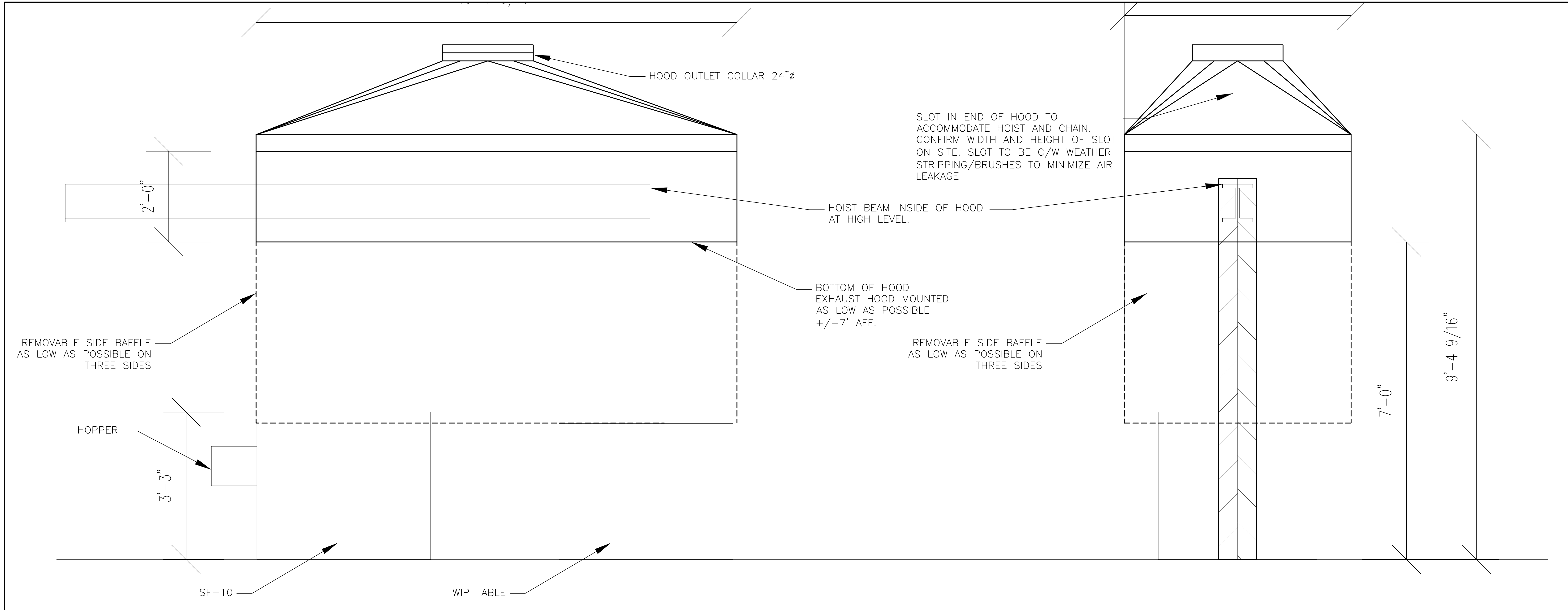
ENG. SEAL

G MECH
ENGINEERING
 G-MECH Engineering Inc.
 29 Oakmont Crescent
 Headingley, Manitoba R4H 1J4 phone: (204) 888-8992
 info@g-mechengineering.com

CUSTOM CASTINGS
CELL 2 HARRISON AND SF-10

HARRISON HOOD DETAILS

DRAWN BY GW	CHECKED BY GW	SCALE AS NOTED	SHEET NO M-2
----------------	------------------	-------------------	------------------------



SF-10 EXHAUST HOOD

7				
6				
5				
4				
3				
2				
1				
0				
REV	DESCRIPTION	OWN	APP	REV DATE

ENG. SEAL

G MECH
ENGINEERING
G-MECH Engineering Inc.
29 Oakmont Crescent
Headingley, Manitoba R4H 1J4
phone: (204) 888-8992
info@g-mechengineering.com

PROJECT
**CUSTOM CASTINGS
CELL 2 HARRISON AND SF-10**

SHEET TITLE
SF-10 HOOD DETAILS

DRAWN BY GW	CHECKED BY GW	SCALE AS NOTED	SHEET NO. M-3
----------------	------------------	-------------------	-------------------------