CITY MIX INC.

64 NATURE PARK WAY
WINNIPEG, MANITOBA R3P 0X8
TEL. (204) 233-3332
FAX (204) 233-3656

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

April 17, 2018

Dear Tracy,

City Mix Inc. is applying for a Class 2 development licence under the Classes of Development Regulation M.R. 164/88 licencing under The Environment Act. The Environmental Act Proposal (EAP) licence application for 1197 Kenaston Boulavard. Please find enclosed a copy of the proposal form, and the required copies of the Environmental Assessment Report.

Should you have any questions or concerns please contact me.

Sincerely,

Jayson Chale
General Manager
City Mix Inc.
jchale@citymixinc.com
204 233 3332

City Mix Inc. Environmental Act Proposal Report

Table of Contents

1. Executive Summary

City Mix Inc. is submitting a proposal for an environmental permit to operate a Portable Stephens Thoroughbred concrete batch plant to produce concrete at 1197 Kenaston Boulevard/64 Nature Park way. Please see appendix A Concrete Plant Specification and Drawings. The purpose of this facility is to service our customer base in Winnipeg, Manitoba. If required our service range is ~100kms from the plant location. The site is developed on a 6-acre parcel of land directly behind the vacant Inland/Lehigh Cement plant located at 1197 Kenaston Boulevard/64 Nature Park Way.

City Mix Inc. does not foresee any potential effects on the environment including, air pollutants, ground water runoff, noise, fisheries, wildlife, or any other concerns.

2. Introduction and Background

City Mix is a well-respected concrete producer servicing Winnipeg and its surrounding areas. We have the knowledge and means to operate a concrete batch plant facility that meets and in many cases, exceeds the Manitoba Heavy Construction Association (MHCA) Concrete Facilities Best Practices guidelines as well as the Concrete Manitoba Certification-Guide-for-Production-Facilities. Please see appendices B and C respectively.

2.1 Products and Services

This facility will produce redi-mix concrete and provide delivery services for the greater Winnipeg area. Concrete is comprised of the following raw materials:

- Portland cement
- Supplemental cementing materials
- Sand
- Aggregate

- Potable water

In addition to these materials please see appendix D Concrete Admixes for a comprehensive list of our concrete admixtures.

3. Description of Proposed Development

3.1 Land Rights

This site is located on a 6-acre parcel of land located on the West side of Kenaston and South of Sterling Lyon. The land title is held by 4326712 MB Limited (Ingenuity Development Corporation) Lot 3 plan 39113 WTLO in O.T.M lots 1-11 parish of St. Charles. See appendix E Land Descriptions for letter of authorization, status of title, survey, site plan and maps for plot reference.

3.2 Existing Land Use

Redi-mix concrete production. The property under the City of Winnipeg Zoning By-law No. 6400/94 is zoned M3. Please see appendix F for development permit.

3.3 Proposed Development

The site is located on 6 acres and will include the following equipment:

- Portable concrete batch plant
- Batcher/office trailer
- Clay based evaporation pit

3.4 Batch Plant Equipment Details:

The plant is manufactured by Stephens Concrete Plants. Their manufacturing plant is in Tompkinsville, KY. The plant is capable of producing 100m3/hr in the summer months and 65m3 during the winter months. Our plant configuration is equipped with 4 cementitious silos ranging in capacity of 80 to 150 tonne that are capable of handling cement or supplemental cementing material. The silos are equipped with bag house filtration systems to capture any airborne cementitious material. Please see appendix I Stephen's Thoroughbred Plant Brochure.

3.5 Batch Plant Operations

The process starts with the following raw materials:

- Cement (T-GU)/Flyash (Class F – Supplemental Cementing Material)
  - Portland cement T-GU will be used in our mix designs. Please see appendix J Certificate of Analysis: Mississauga Plant Type GU
  - Flyash Class F will be used as a supplemental cementing material in most of our mix designs. Please see appendix K Boral Resources Flyash Material Data Sheet.
  - Cementitious powder will be delivered to site by bulk tanker truck equipped with a blower to fill designated silo's.

    - The pressurized cementitious bulker forces powder into the silo's. The pressure creates the cementitious material to become airborne within the silo.
    - The bag house captures this airborne cementitious material. Once the pressure is normalized gravity feeds the cementitious material from the bag house back into the silo.
    - The bag house is cleaned monthly.
- Supplemental cementing material
    - A material that, when used in conjunction with Portland cement component of hydraulic cement, contributes to the properties of the hardened concrete through hydraulic or pozzolanic activity, or both
    - See appendix L CSA A3000-08 Cementitious Material
    - See appendix M CSA Section 5 Requirements for supplementary cementing materials and blended supplementary cementing materials
- Aggregates (both coarse and fine)
    - Aggregates consisting of fine aggregate (sand 5mm down) and coarse aggregate (10, 14, 20 & 40mm). The aggregates are placed into stock piles separated by concrete bin walls or secluded stock piles to eliminated cross contamination. See appendix N Aggregate Site Layout.
    - At any given time approximately, 5500m3 of coarse material and 1200m3 of fine will be stored on-site.
    - A rubber tire front end loader moves material as required from the stock piles to a conveyer that loads the aggregate bins of the batch plant
- Admixtures
    - Admixtures stored on-site are those commonly used in our batching of concrete. Admixtures are used to change or delay properties in our concrete mix design to achieve desired slump, strength, workability, finishability and durability.
    - Admix is delivered by tanker trucks by Brett Admixtures. These admixtures are stored in ridged plastic storage tanks provided by Brett Admixtures. These storage tanks include secondary containment.
    - A detailed list of our admixtures can be reviewed in appendix D
- Water
    - Potable water is supplied by City of Winnipeg.
    - On average based on our Marcotte batching software, we use ~110l/m3 of concrete produced.

3.6 Batching Process

- Pre-Load aggregate bins and cement silo.
- Zero all scales and meters including aggregate, cement and water.
- Back truck to conveyor. Ensure truck is true to conveyor and sock is completely in truck hopper.
- Start main plant conveyor.

- Charge up admixes to required amounts in bottles.
- Set water meter to 70% of water required for batch.
- Discharge 70% of required water into truck while purging water fed admixes (from bottles) into waterline.
- Feed aggregates and cement into truck at uniform moderate rate until prescribed individual constituents have met target. During feeding of aggregates discharge air entraining admix (if applicable) onto aggregates as they are progressing up the conveyor belt. Aggregate and cement are measured de-cumulatively.
- Set water meter to 30% of water required for batch.
- Discharge final 30% of water.
- Record all volumes of each material and product onto batch form.
- Truck must mix a minimum of 70 revolutions at full mixing speed.
- Final adjustment of slump to be made with water.

4. Description of Existing Environment in the Project Area

4.1 Biophysical Environment

The location consists of mixed land usage. North of City Mix there is a cement distribution facility and concrete batch plant, South of City Mix there is Tuxedo Business Park with green space. East of City Mix is green space reaching Kenaston Boulevard, West of City Mix there is a large hill/berm that separates us from green space and McCreary Road.

4.1.1 Climate

The City of Winnipeg has a humid continental climate with wide temperature contrasts between winter and summer, and greater precipitation in summer. Mean January temperature is −16.4 °C (2.5 °F), and mean July temperature is 19.7 °C (67.5 °F). Average annual precipitation is 521.1 mm (20.52 in); snow falls on 53 days and lies on 132 days in an average year.

4.1.2 Water

The properties ground water drainage is directed via an isolated (not CofW) sewer network to man-made ponds within the commercial development South of our site location.

4.2 Socio-Economic Environment

The development is in the South-Western portion of Winnipeg, Manitoba. Topographical elevation average is 784 feet. Water supply is provided by City of Winnipeg and meets the Guidelines for Canadian Drinking Water Quality. Tuxedo Business Park is located directly South of our operation and is in support of our operation. Please see appendix G Tuxedo Business Park Letter of Support.

5. Description of Environmental and Human Effects of the Development

5.1 Land

The concern of land dust will be mitigated by proper dust control application(s). Water will be used primarily although application of dust-control solution may be required. The plant is equipped with a Bag House Filtration system. This system captures cement dust during the load phase and releases clean air to the environment. Please see Appendix H Plant Equipped Cement Silo (SOS-1020) and Scale Bag House. We do not anticipate any further land effects from this operation.

5.2 Water

City of Winnipeg water will supply the facility. Ground water will be directed via grade or private sewer systems located in the development. All water contaminated with cementitious, sand or stone material will be contained within our evaporation pit. This evaporation pit will be cleaned out as required. The dredged material will be stock piled adjacent to the evaporation pit. Once this material is dry, it will be recycled/reclaimed/reused for fill material.

5.3 Pollution and Hazardous Waste

There is no hazardous waste produced in the manufacturing of concrete. All concrete admixtures will be stored on secondary containment. Please see appendix D Concrete Admixes for a list of our on-site concrete admixtures.

5.4 Socio-Economic Impacts

This development will provide quality concrete for projects within the Winnipeg market. During the construction season up to 70 staff will be employed at this facility.

6. Mitigation and Residual Environmental Effects

6.1 Environmental Management

Environmental management of the site will follow all federal, provincial and City of Winnipeg laws and regulations. In addition to this we follow the Manitoba Heavy Construction Association Redi-Mix Concrete Facilities Best Practices.

Internally we have implemented a block program to minimize the amount of concrete waste generated by our facility. The concrete that is not suitable for the block program is crushed and sold as base material.

All water contaminated with cementitious, sand or stone material will be discharged into our evaporation pit. This is a clay based pit where water will evaporate and solids settle. The dredged material will be stock piled near this washout pit. Once this material is dry, it will be recycled/reclaimed for fill material.

6.2 Pollution and Hazardous Waste

There is no storage of diesel fuel, gasoline or any other hazardous materials on-site. All fueling of equipment and maintenance is completed off site. All equipment contains spill kits onboard. All staff complete WHIMIS training annually.

7. References

Appendix A - Concrete plant Specifications and Drawings

Appendix B - Redi-Mix Concrete Facilities Best Practices

Appendix C - Concrete MB Certification-Guide-for-Production-Facilities

Appendix D - Concrete Admixes

Appendix E - Land Description

Appendix F - Development Permit

Appendix G - Tuxedo Business Park Letter of Approval

Appendix H - Plant Equipped Cement Silo (SOS-1020) and Scale Bag House

Appendix I - Stephens Thoroughbred Plant Brochure

Appendix J - Certificate of Analysis: Mississauga Plant Type GU

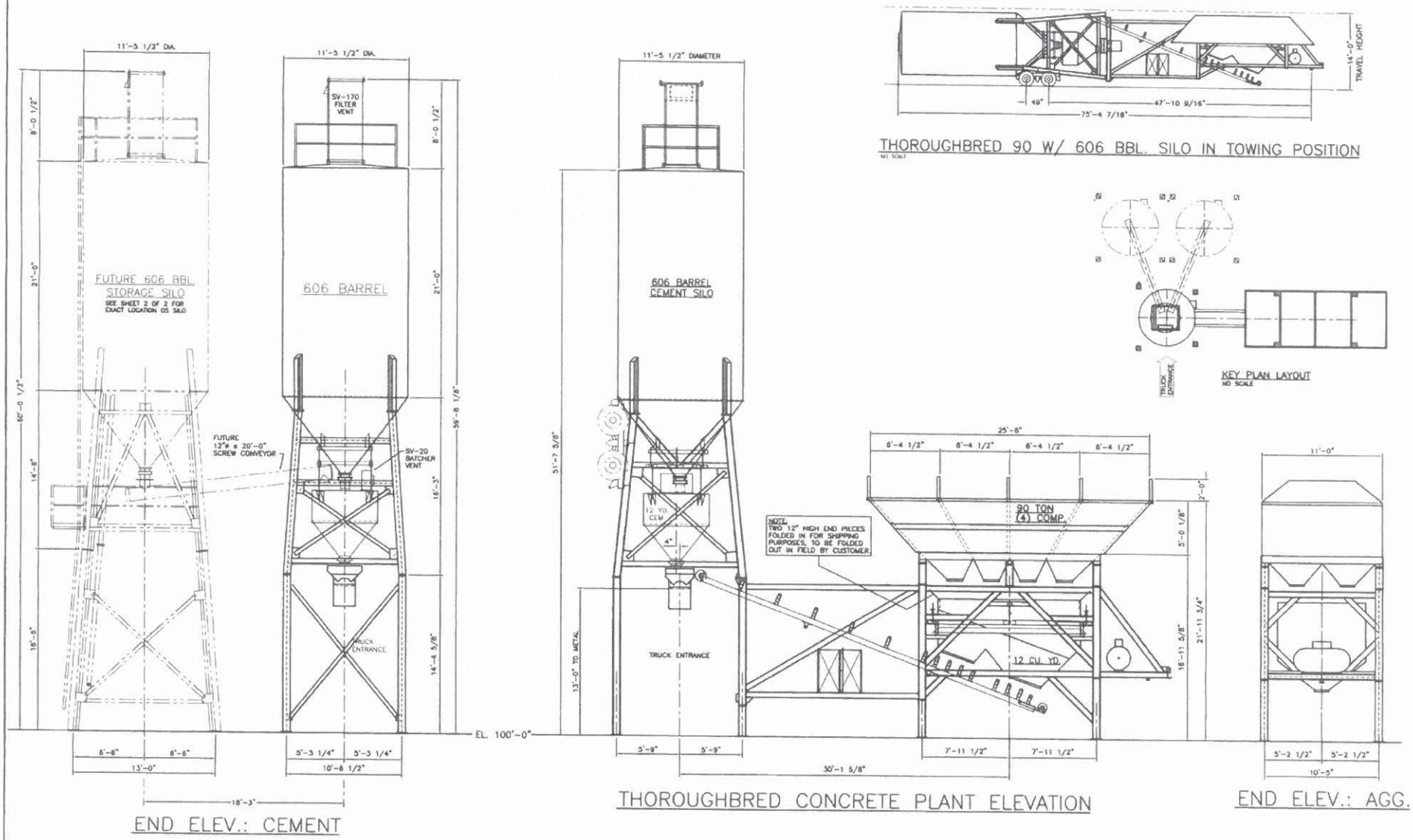
Appendix K - Boral Resources Flyash Material Data Sheet.

Appendix L - CSA A3000-08 Cementitious Material

Appendix M - CSA Section 5 Requirements for supplementary cementing materials and blended supplementary cementing materials

Appendix N - Aggregate Site Layout

APPENDIX A: CONCRETE PLANT SPECIFICATIONS AND DRAWINGS



DRAWING NO.	REFERENCE	NO.	DATE	REVISION
		2	1/13/00	MAKE 4 COMP BIN IN LIEU OF 3. CHANGE NAME TO CITY READY MIX.
		1	12/23/99	TB-165 FRAME W/ADDED 8" BETWEEN BAYS AND AGG. BATCHER
		3	1/19/00	SILO NOW 606 BBL. (Was 528 Bbl.); ADDED FUTURE SILO, BASE LAYOUT ON SHEET 2

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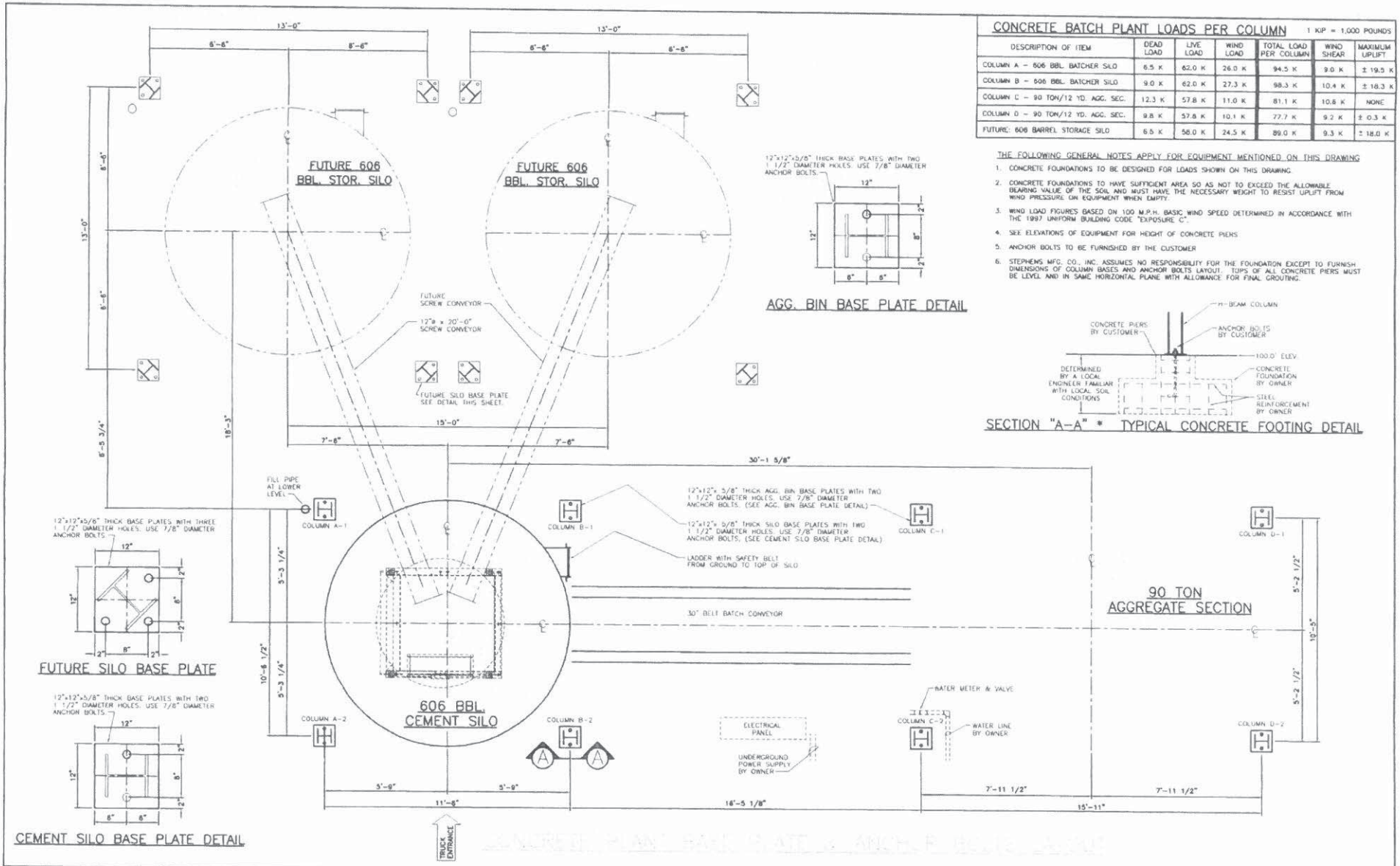
DWN. BY: BK & CB
DATE: 1/13/00
SCALE: NONE

Stephens
TOMPKINSVILLE, KY. 42167

FOR: CITY READY MIX INC.
WOODBRIDGE, ONTARIO CANADA
TITLE: THOROUGHBRED 12 YD. BATCH PLANT ELEVATIONS AND LAYOUT

YEAR: 99
JOB NO: 42241
CODE: TH
SHEET NO: 1 OF 2
REV NO: 3



CONCRETE BATCH PLANT LOADS PER COLUMN

1 KIP = 1,000 POUNDS

DESCRIPTION OF ITEM	DEAD LOAD	LIVE LOAD	WIND LOAD	TOTAL LOAD PER COLUMN	WIND SHEAR	MAXIMUM UPLIFT
COLUMN A – 606 BBL. BATCHER SILO	6.5 K	62.0 K	26.0 K	94.5 K	9.0 K	± 19.5 K
COLUMN B – 606 BBL. BATCHER SILO	9.0 K	62.0 K	27.3 K	98.3 K	10.4 K	± 18.3 K
COLUMN C – 90 TON/12 YD. AGG. SEC.	12.3 K	57.8 K	11.0 K	81.1 K	10.8 K	NONE
COLUMN D – 90 TON/12 YD. AGG. SEC.	9.8 K	57.8 K	10.1 K	77.7 K	9.2 K	± 0.3 K
FUTURE: 606 BARREL STORAGE SILO	6.5 K	56.0 K	24.5 K	89.0 K	9.3 K	± 18.0 K

THE FOLLOWING GENERAL NOTES APPLY FOR EQUIPMENT MENTIONED ON THIS DRAWING

1. CONCRETE FOUNDATIONS TO BE DESIGNED FOR LOADS SHOWN ON THIS DRAWING.
2. CONCRETE FOUNDATIONS TO HAVE SUFFICIENT AREA SO AS NOT TO EXCEED THE ALLOWABLE BEARING VALUE OF THE SOIL AND MUST HAVE THE NECESSARY WEIGHT TO RESIST UPLIFT FROM WIND PRESSURE ON EQUIPMENT WHEN EMPTY.
3. WIND LOAD FIGURES BASED ON 100 M.P.H. BASIC WIND SPEED DETERMINED IN ACCORDANCE WITH THE 1997 UNIFORM BUILDING CODE "EXPOSURE C".
4. SEE ELEVATIONS OF EQUIPMENT FOR HEIGHT OF CONCRETE PIERS
5. ANCHOR BOLTS TO BE FURNISHED BY THE CUSTOMER
6. STEPHENS MFG. CO., INC. ASSUMES NO RESPONSIBILITY FOR THE FOUNDATION EXCEPT TO FURNISH DIMENSIONS OF COLUMN BASES AND ANCHOR BOLTS LAYOUT. TOPS OF ALL CONCRETE PIERS MUST BE LEVEL AND IN SAME HORIZONTAL PLANE WITH ALLOWANCE FOR FINAL GROUTING.

DRAWING NO.	REFERENCE	NO.	DATE	REVISION
		1	1-20-00	MOVED BASE LAYOUT TO THIS SEPARATE DRAWING TO SHOW FUTURE STORAGE SILOS

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DWN. BY: GWB
DATE: 1-20-00
SCALE: NONE

Stephens
TOMPKINSVILLE, KY. 42167

FOR: CITY READY MIX
WOODBRIDGE, ONTARIO, CANADA
TITLE: THOROUGHBRED BATCH PLANT BASE PLATE AND ANCHOR BOLTS LAYOUT

YEAR 99 | JOB NO. 42241
CODE 18 | SHEET NO. 2 OF 2
REV NO. 1

ONE (1) ONLY NEW STEPHENS SUPER THOROUGHBRED

PORTABLE CONCRETE PLANT

STANDARD EQUIPMENT

CEMENT SECTION:

- 4,279 cubic feet-cylindrical design - 11'5" diameter 1069bbl silo.
- Two compartments with 4" double wall partition. Split 60/40 with penetration check plugs.
- Two safety pressure-relief valves mounted on top with weighted covers.
- Two 5" diameter fill lines with camlock couplings.
- Two sets of aeration diffusers in cone.
- Moisture filter-regulator with pressure gauge.
- Outside ladder & safety cage with handrail & toeboard around top.
- Inspection hatches on top of silo.
- Inspection hatches mounted in the cone of each compartment.
- Two 10" butterfly valves with actuators on silo to weigh batcher.
- Electric solenoid mounted on power panel for actuator. Flo-restrictors mounted in solenoid.
- Two SOS-1020 cartridge filter vents.
- Two low level cement indicators.
- Fourteen yard cement batcher with: 10,000 lb. scale lever system, load cell and digital readout.
- SV-20 cement batcher filter vent.
- Two aeration diffusers in cone of cement batcher with electric solenoid controls.
- Turbine type air vibrator with electric solenoid.
- Manual emergency slide gates.
- Two additional solenoids for future cement silos.
- One additional 20hp starter for future cement screw.
- Hinged legs for easy transportation

AGGREGATE BATCHER SECTION:

- **Fourteen cubic yard** with: 44,000 lb. scale lever system. load cell & digital readout.
- Two 16" x 42" double-acting clamshell gates, lined with 3/16" A.R. metal, actuated by 4" air cylinders.
- Two discharge openings in batcher with one (1) extra long double acting clamshell gate, under both openings. Gear type gate with six (6) ¾" teeth per gear. Gate has permanently lubricated bronze bushing. Gate will be actuated by two 5" air cylinders, with flow restrictors mounted in one (1) solenoid
- Two turbine type air vibrators with electric solenoids.
- Filter-regulator-lubricator unit for solenoids & air cylinders.
- 36" super fast option includes 5" idlers in lieu of 4". Plant has back in line structure for trucks.
- 30 H. P. 3-phase T.E.F.C. motor.
- Shaft-mounted gear reducer
- Back stop in reducer to prevent belt roll back.
- 12" diameter rubber lagged head pulley with 2 7/16 shaft/bearings.
- Truck collection hopper. 1/4" A/R liner.
- 35 degree troughing idlers (4" dia.) with sealed bearing, placed on 4' centers with 3 extra idlers @ charging point under gate.
- Self-cleaning tail pulley with 12" screw-type take ups.
- Skirtboards around loading point on belt.
- Plant power panel: fused main disconnect mounted on steel panel with protective top cover. Junction box with pre-wired terminal strips for connections to electric solenoids. 100' of plug-in control cable from power panel to 110 volt control box with 110 volt fuse. Electrical wiring from all motors to starters wired in conduit. Power panel is mounted on aggregate batcher section.
- NOTE: voltage 480 or 575 three phase.
- Motor control center U.L. and CSA approved.
- Motor control center large enough to accommodate stacker starters if required.

- Magnetic starter for transfer conveyor wired from motor to starter.
- Starter mounted on plant power panel.
- 3" water meter with 3" butterfly valve, actuator, electric solenoid with valve close speed control to assist in dampening water hammer and pre determining counter. The meter will accurately measure 350 gallons per minute. Meter mounted on support stand. Hose included from meter to truck collection hopper. Water meter works with hot & cold water.
- 15 HP Ingersol Rand air compressor with T.E.F.C. motor & 240 gallon tank - 51 CFM with starter on power panel, wired in PVC conduit from compressor motor to starter on plant power panel.
- All air devices plumbed in rubber air hose.

AGGREGATE STORAGE SECTION:

- 200 ton – 4 compartment in line overhead storage bins.
- Two gear type clam gates on each compartment lined with 3/16" A.R. metal.
- 5" diameter air cylinders with electric solenoid push buttons.
- Heap plates.
- All air devices plumbed with rubber air hose.

GENERAL SPECIFICATIONS:

- Tandem, dual wheel, 20,000 lb axle transportation system.
- King pin and rub plate for fifth wheel connection.
- Rust inhibitive primer and **one color coat of (industrial enamel): slate gray.**
- All electrical solenoids have manual over-rides

Stephens Radial Stacker Standard Equipment

30" X 110' 30HP 3-phase drive

Stephens Mfg. is a member of the CPMB (Concrete Plant Manufacturers Bureau). Each conveyor will have a CPMB rating plate to guarantee that it meets the specifications for that size conveyor.

Note: Parts and structure do vary from machine to machine as new product testing and research proves their success.

Section I			**Major Structural Details**
(a)	Conveyor Truss Frame:	Main Cording Diagonals: Stiffener:	3" x 3" x ¼" angle 2-1/2" x 2-1/2" x 3/16 angle 4" x 4" ¼" angle (a 10' long stiffener is required at each pin, on conveyors up to 80'. A stiffener is required on the entire length of conveyors 90-120' long)
(b)	Supports:	Head Support:	4" schedule 40 pipe on conveyors up to 90'. 5" schedule 40 pipe on conveyors 90-120' long. 3" x 3" x ¼" stiffeners on support.
		Tail Support:	8" channel with 6" channel stiffeners, and 3" x 3" x ¼" braces.
(c)	Travel System:	Axle:	10"x 6" x ½" rectangular structural steel. Includes wheels and tires.
		Tires	are new (not recaps)
		Drive:	1 HP motor, 3 phase with dodge reducer. Driven by sprockets and chain, with safety guard.
(d)	Electric Brake:		Standard on power travel.
Section II			**Conveyor Components**
(a)	Drive Motor:		3 phase/60 HZ/1725 RPM/TEFC 480 or 575 volts.
(b)	Shaft mounted reducer:		25.1 ratio backstop to prevent belt roll back with belt guard.
(c)	Motor sheaves:		included
(d)	V-belts:		included
(e)	Conveyor pulleys:		(drive pulley) crowned faced drum with 32" face width, with two bushings **vulcanized rubber lagged head pulley with grooved grips.** (tail pulley) crowned face wing x 26/32 or 38" face width, with bushings. **Safety guard around tail pulley.**

(f)	Pillow block bearings:	(drive pulley) two units, 2 bolt roller bearing pillow blocks. All 30HP conveyors will have type "E" bearings at head pul ley.
(g)	Take-ups:	(tail pulley) two units, 2 bolt roller bearing pillow blocks. Top mounted slide take-ups using threaded adjustment rods with 24" travel.
(h)	Idlers:	One (1) 20 degree steel idler at tail pulley. 4" diameter rolls with sealed 35 degree steel idlers 4" diameter roll with sealed bearings. 4' centers, extra idlers at charging point. 0 degree steel returns, 4" diameter roll with sealed bearings. 10' centers.
(i)	Belting:	2 ply, 220 PIW 3/16" x 1/16" covers 30" wide. **Belting made in USA.**
(j)	Conveyor belt splice:	Flexco belt fastners.
(k)	Flashing/skirt board:	5' metal frame collection hopper lined with ½" rubber skirting material.
(l)	Limit switches:	Mounted on bottom of dump hopper. Prohibits radial stacker from traveling to far, preventing damage to hopper and conveyor.
(m)	Belt wiper:	Belt wiper with polyurethane blade.
(n)	Paint Prep:	Conveyor will be high pressure water blasted and washed with de-greaser. Rust inhibitive primer and one color coat of industrial enamel.

Capacity of Conveyor: 30" – 530 tons per hour 290 FPM

Note: Conveyor HP based on 19.5 degree incline. Material at 100# per cubic foot with 29 degree angle of repose.

Options Included:

Dump Hopper: with manual gear type gate with permanently lubricated bronze bushings. Constructed of¼" steel on sloping sides. 17.5 ton (12' x 10') with heap standard hopper with legs to grade. Electric vibrator for dump hopper Includes magnetic starter. Vibrator wired with liquid tight metallic flex conduit.

Magnetic starters: Left to right reversing starter for power travel and, magnetic starter for 30HP motor are included.

Wiring: Wired in liquid tight flexible metallic conduit. From conveyor motor to starter mounted on power panel, power travel motor wired (to travel over bins only) from motor to starter mounted on power panel, controls for start/stop wired to charging end of conveyor

Warning signals: Warning horn to indicate start of conveyor, wired in liquid tight metallic flex conduit.

Remote control Four (4) function with vibrator & belt start combo with starter button combo for positioning radial stacker over bin compartments and start/stop controls on conveyor. One (1) controller with four (4) buttons: conveyor start/stop conveyor left/right. Manual backup is located on dump hopper.

APPENDIX B: REDI MIX CONCRETE FACILITIES BEST PRACTICES

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MANITOBA HEAVY CONSTRUCTION ASSOCIATION

Best Environmental and Safety Management Practice

Redi-Mix Concrete Facilities

Manitoba Heavy Construction Association

Best Management Practice

REDI-MIX CONCRETE PLANTS

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Note:

This Best Management Practice (BMP) and all supporting materials are only a guideline and supplement to the interpretation of existing legislation and industry practices. It is designed and intended to help and assist members of the heavy construction industry in developing and implementing their own environmental management system. This BMP is not legislation, is not intended to replace any legislation and does not guarantee establishing a successful "due diligence" defense in the event of legal action. This BMP and all supporting materials are not to be reproduced without written permission from the Manitoba Heavy Construction Association. No warranty is made with regard to this BMP and its contents, and all supporting materials and their contents.

The material in this BMP may be incorporated into the working knowledge of the reader but its use should be subjected to the particular circumstances of each user.

ACKNOWLEDGEMENTS

This document has been a joint effort between members of the Manitoba Heavy Construction Association (MHCA) and the Manitoba Redi-Mix Association. Having all stakeholders involved in its development has been beneficial. The MHCA would like to acknowledge all who were involved in the development of the document. The document will be distributed to and used for training of, the redi-mix industry throughout Manitoba.

1. INTRODUCTION

1.1. Purpose

The Best Management Practices (BMP) was developed to assist owner(s) and operators of Redi-Mix Concrete Facilities to adopt best practices in order to improve the environment, protect human health and safety, and reduce potential risks and economic liabilities at their work site.

This document outlines recommended operational practices that will minimize the impact of Redi-Mix concrete plants on the environment and promote safety at the workplace. The document can be used for new facilities or for upgrading existing facilities.

BMP is intended to identify best management practices as a supplement to the requirements of existing legislation. BMP is NOT intended to create or replace any legislation, industry standards, code or guidelines. BMP does not guarantee a successful "due diligence" defense in the event of legal action. Although reference is made in BMP to provincial statutes and regulations, where federal legislation is applicable (such as on First Nation Lands, or National Park Lands) such legislation shall also be complied with. As well, municipal by-laws and other industry standards and codes should be observed.

This document was developed in April 2000. The document will be reviewed every three (3) years to ensure the information is up to date, relevant to the industry, and reflects changes in industry practices and legislation.

1.2. Background

In the overall context of industrial facilities, Redi-Mix concrete plants do not generally pose a significant problem in terms of environmental impact. The usual ingredients that are combined to produce concrete as outlined by the Canadian Portland Cement Association in 1990, as follows:

➢ Course aggregate	48% by weight	31-51% by volume
➢ Fine aggregate	31%	24-48%
➢ Portland cement	13%	7-15%
➢ Water	8%	14-18%
➢ Admixture chemicals (control Characteristics such as air Entrainment, water/cement Ration, initial set, and Compressive strength)	<0.01%	N/A
➢ Air	N/A	4-8%

These ingredients are mixed, with no heat involved (except steam for aggregate heating in late season), in an overhead silo and drum. The mix is then deposited into a mixer truck for

transport to a job site. Alternatively, concrete production can be mixed directly in the mixer truck and transported to a job site.

Emissions, as a result of this mixing operation are limited, but may include dust particles from aggregate piles or in the mixing process become airborne in the drum or silo, and noise. Surface drainage, and wastewater and solid waste management can pose site management issues at Redi-Mix concrete facilities.

2. GENERAL – Compliance with the Law

- Take all reasonable steps to identify all applicable laws, including legislation, regulations, municipal by-laws and codes. Comply with all aspects of applicable laws.
- Obtain all proper and applicable licenses, permits and Certificate of Approvals for site operations.

3. PERMANENT PLANTS (see Appendix A for Definition)

- The owner/operator shall make efforts to minimize noise nuisance created as a result of the operation.
- Spent bag house filters should be disposed of in an environmentally friendly manner.
- To every extent possible, the owner/operator should practice the best environmental practices listed under Sections 5.1, 6.0, and 7.0 at the permanent plant.
- All environmentally related activities should be recorded.

4. PORTABLE PLANTS (see Appendix A for Definition)

- Siting of portable plants should be, to every extent possible, reviewed and sited at an early stage in connection with the local Municipal Authority and Manitoba Conservation Environment Officer.
- The owner/operator should consult with adjacent landowners.
- All environmentally related incidents should be recorded.
- To every extent possible, the owner/operator should practice the best environmental practices listed under Sections 5.1, 6.0, and 7.0 at the portable plant.
- After removal of the portable plant from a property, leave the site in a neat and clean condition; sites should be left in an aesthetically acceptable condition.

5. SITE MANAGEMENT

5.1. General Site Management

- Plastic concrete is toxic to fish (e.g. reducing the BOD) and therefore must not enter watercourses. Efforts to ensure catchment of wet concrete must be implemented on-site (e.g. a drop sheet).
- Where practical and appropriate, mitigation measures should be implemented to protect fine aggregate stockpiles from wind erosion.
- In an urban or highly populated setting, dust suppressants should be used on internal plant roads to minimize dust carrying off the site. Water is an example of an environmentally friendly dust suppressant.
- Runoff from the concrete plant site should be minimized to prevent contamination.
- Use good housekeeping practices to clean up spills of cement and concrete as soon as possible.
- It is recommended that incidents occurring at the concrete plant be recorded.
- Staff involved in concrete production should be made aware of this BEMP.

5.2. Site Water Management

A reduction in water usage could be achieved by the following options:

- Monitoring/auditing of water usage;
- Use water reducing admixtures which reduce the amount of given water in the batch concrete;
- Capture and reuse wash water;
- Restrict freshwater uses to truck exterior wash off, hot water production and batch water for high quality concrete;
- Install flow controls on freshwater sources, where practical;
- Recycle water, where practical; and
- Train employees to minimize water use and on water conservation practices.

- Conduct chemical washing of trucks in a safe manner (appropriate PPE).
- The resultant wash, which is generally neutralized, should be disposed of using a safe and environmental practice.
- Use a sloped settling pond for washout, where practical.
- Where necessary and practical, containment of wastewater and surface runoff is recommended.

5.3. Site Air Management

To improve air quality at Redi-Mix facilities, one can follow such examples:

- Install effective dust removal devices such as bag houses on vents from pneumatic or mechanical transfer systems;
- Use curtains or socks for truck loading operations;
- Minimize surface areas of aggregate storage piles;
- Locate aggregate storage piles in area sheltered from wind, where practical;
- Pave high vehicle traffic areas and use dust control, where practical;
- Reduce speed limits;
- Routine sweeping of paved portions of yard to remove accumulated dust; and
- For aesthetic and environmental purposes, one should consider planting vegetation (i.e. trees) around the site.

6. MATERIALS MANAGEMENT

6.1. Pollution Prevention: General

- The owner/operator should implement a high standard of equipment and maintenance, and good housekeeping and operational practices, at all times.

6.2. Chemical and Fuel Management

- Proper storage of lead batteries, solvents and waste oil for recycling.

- Ensure containment at fuel and chemical handling areas is sufficient.
- Install proper WHMIS signage to identify contents of bulk tanks.
- Facility operators should be familiar with appropriate sections of the Manitoba Environment Act and any other applicable guidelines, codes and local land use permits with regards to handling and storage of fuels.
- The Owner/Operator shall obtain all necessary permits from Manitoba Conservation for the handling and storage of fuel products and shall keep copies available for reference.
- Take adequate precautions to ensure that diesel fuel, oil, grease and other transportable material do not enter surface and groundwater courses. For example:
  - Fuels, lubricants and other potentially hazardous materials as defined in the Manitoba Dangerous Goods Handling and Transportation Act shall be stored and handled within the designated storage area(s).
  - The Owner/Operator should ensure that all equipment is maintained such that it poses a minimum risk to the environment.
  - The Owner/Operator should ensure that all fuel storage containers are inspected, for leaks and spillage of hazardous fluids, (such as oil) on a regular basis, and repairs carried out immediately.
  - When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, suitable spill response equipment (such as spill trays and spill kits) should be available to catch the fluid, contain, and collect small spills.

7. WASTE MANAGEMENT

7.1. Non-Hazardous Waste

- The Owner/Operator when necessary should undertake site clean-ups, with all resulting debris deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation 150/91. Exceptions are liquid industrial and hazardous wastes, which require special disposal methods.
- Indiscriminate dumping or littering shall not take place.
- No burning or burying of wastes at the concrete plant sites (both permanent and portable) shall be allowed unless approved by appropriate authorities.
- Reuse returned concrete for other purposes, where practical.

- Incorporate returned concrete in succeeding batches where operational and quality constraints allow.

- Wherever possible sludge should be recycled for other purposes, where practical.

- When disposing of all other solid waste, i.e. paper, wood, metals refuse. etc. that it may be carried out with consideration for reuse & recycle.

7.2. Hazardous Waste

- Dangerous goods/hazardous waste is identified by, and shall be handled according to the Manitoba Dangerous Goods Handling and Transportation Act and associated Regulations.

- The Owner/Operator shall have on site staff that is trained and/or knowledgeable in the handling and transportation of dangerous/hazardous goods, when said dangerous goods/hazardous wastes are being utilized.

- Used oils shall not be used for dust suppression unless approved by appropriate authorities

- Used oils shall be stored in appropriate drums, or tanks with signage until shipped to used oil recycling centres, incinerators, or disposal facilities approved for such wastes.

- Used oil filters shall be drained, placed in suitable storage containers, and disposed of in an appropriate manner.

8. EMERGENCY RESPONSE

- The Owner/Operator should ensure that there is an Emergency Management Plan in place, and that it has been communicated to all employees.

- The Owner/Operator should designate an on-site Emergency Response Coordinator (ERC) for the project. The ERC shall have the necessary training, authority, and responsibility to redirect manpower in order to respond to an emergency. The Emergency Response Coordinator (ERC) shall be familiar with the Emergency Management Plan, and have on site a list of telephone numbers to call in the event of an emergency, and a map to the closest hospital including at least Manitoba Conservation, Environment Canada, emergency company contacts, and the local fire and police departments.

- The Owner/Operator shall report and document all environmental accidents involving contaminants (as defined in Appendix B) to Manitoba Conservation, immediately after occurrence of the environmental incident, by calling the 24-hour emergency phone number, in accordance with Manitoba Regulation 439/87.

- In general, the following actions shall be taken by the first person(s) arriving at the scene (first responder) of a spilled dangerous good/hazardous waste:

1. Secure area and ensure safety;
2. Assess the situation/risks and identify spilled material;
3. Respond (e.g. get help, eliminate source of ignition, contain, block sewers etc.), if it is safe to do so.
4. Notify, verbally, the appropriate government agency immediately. Follow up with a written document (fax).
5. Manage spilled material, if it is safe to do so.

- When dangerous goods are used on site, materials for containment and cleanup of spill material (e.g. spill kit) should be available on site.

- Minor spills of such substances, less than reportable quantities shown in Appendix B, which may be contained on land with no significant impact on human health or the environment, may be responded to with in-house resources without formal notification of Manitoba Conservation.

9. **Safety**

- Each new worker should be given a plant orientation before they start work, which should include a tour of the plant and how it operates, where to find a telephone, emergency first aid kit, fire extinguisher who to report to and where to evacuate to, where the MSDS's are kept and the hazards at the plant.

- Always communicate with the plant operator, especially when you are doing any maintenance at the plant.

- Good housekeeping in the yard and plant will go a long way to preventing trips and falls.

- Each worker should know about the chemicals on site and the proper PPE to wear and where the PPE is kept.

- At a concrete plant, dust masks need to be with you at all times.

- Falling objects are a hazard at concrete plants therefore; Hardhats and steel-toed boots are required.

- Watch for traffic in a concrete yard and give right of way to all vehicles and be sure to make eye contact with the drivers before crossing their path.

- Wear the right PPE and read the MSDS when acid washing a truck and always work with your back to the wind.

- Never pour water into acid dispense the acid into the water.
- Always use proper lifting procedure; Bend your knees, get under the load and lift with your legs.
- When cleaning a mixer drum in a redi-mix truck, use full confined space entry procedures and plan your work. And wear all necessary PPE at a minimum; this is eye protection, steel toed boots, gloves and hearing protection.
- Always have an entry watch person when cleaning the in side of a mixer drum. Both persons need to have confined space entry training.
- All pinch points within reach should be guarded and wear all PPE and clothing nice and snug
- Always use the 3-point contact method to mount and dismount a truck cab.
- Concrete is caustic avoid direct contact by using the appropriate PPE.

APPENDIX A: GLOSSARY OF TERMS

The following Glossary of Terms apply to the Redi-Mix Concrete Facilities BEMP:

Aggregate: granular materials, such as sand, gravel, crushed stone, crushed hydraulic-cement concrete, or iron-blast finance slag, used with a hydraulic cementing medium to produce concrete or mortar.

Batch: quantity of either concrete or mortar mixed at one time.

Biological Oxygen Demand: the amount of oxygen required by bacteria while stabilizing decomposable organic matter under aerobic conditions.

Calcium Chloride: a crystalline solid, $CaCl_2$: in various technical grades, used as a drying agent, as an accelerator of concrete, a de-icing chemical, and for other purposes.

Cement, Bulk: cement that is transported and delivered in bulk (usually in specially constructed vehicles) instead of in bags.

Concrete: a composite material that consists essentially of a binding medium within which are embedded particles or fragments of aggregate, usually a combination of fine aggregate or coarse aggregate; in Portland cement concrete, the binder is a mixture of Portland cement and water.

Decibel: a comparative unit that measures the intensity of sound. It is the term to identify 10 times the common logarithm or the ration of two like quantities proportional to power or energy.

De-Scaling Agent: chemicals used in water to prevent scale from forming on pipes and tanks/vessels. Bromine is a common de-scaling agent.

De-Watering: refers to a process used in detention/retention facilities, whereby water is completely discharged or drawn down to a pre-established pool elevation by way of a perforated pipe. De-watering allows the facility to recover its design storage capacity in a relatively short time after a storm event.

Dust Suppressant: an example is water. Other materials can be applied without prior approval from a given jurisdiction.

Effluent: flowing forth or out.

Emission Source: from concrete plants includes: 1) diluted sources which are ducted to the atmosphere through a stack. 2) Fugitive emission emitted directly to the atmosphere from open sources i.e. from yard dust, loader and mixer travel, handling aggregate, wind erosion, etc.

Mechanical Reclaimer: any equipment that mechanically separate components of plastic concrete allowing the reuse of the individual components where operational and quality constraints allow.

Mixing, Water: the water is freshly mixed sand-cement grout, mortar, or concrete, exclusive of any previously absorbed by the aggregate.

Noise: unwanted or undesirable sound; sounds which create detrimental effects.

Opacity: means the degree to which an emission reduces the passage of light (obscures the view of an object in the background) expressed numerically from 0% (transparent) to 100% (opaque).

Permanent Plant: a permanent batch plant is one that remains in one location for more than 1 year.

Portable Plant: capable of being moved from one job site to another and sited for less than 365 days in a single location. A portable plant is where the aggregate batching and weighing system is contained on a unitized chassis wholly capable of being towed down a road to a remote job site. This chassis may or may not include the cement-weighing portion of the process. Sometimes, depending on the silo size, the cement silo is a separate entity. Portable plant can also include a mobile mixer.

Sludge: any thick, semi-fluid mass, usually a sediment or filtered waste product, muddy or slushy sediment.

Slurry: thin mixture of water and any several fine, insoluble materials.

Stormwater Treatment: detention, retention, filtering or infiltration of a given volume of stormwater to remove urban pollutants and reduce frequent flooding.

Truck Mixer: a concrete mixer suitable for mounting on a truck chassis and capable of mixing concrete in transit.

APPENDIX B: REPORTABLE QUANTITIES

CLASSIFICATION	HAZARD	REPORTABLE QUANTITY OR LEVEL
1	Explosives	All
2.1	Compressed Gas (Flammable)	100 L*
2.2	Compressed Gas	100 L*
2.3	Compressed Gas (Toxic)	All
2.4	Compressed Gas (Corrosive)	All
3	Flammable Liquids	100 L
4	Flammable Solids	1 Kg
5.1 Packing Groups I & II	Oxidizer	1 Kg or 1 L
Packing Group III	Oxidizer	50 Kg or 50 L
5.2	Organic Peroxide	1 Kg or 1 L
6.1 Packing Group I	Acute Toxic	1 Kg or 1 L
Packing Groups II & III	Acute Toxic	5 Kg or 5 L
6.2	Infectious	All
7	Radioactive	Any discharge or radiation level exceeding 10 mSv/h at the package surface and 200 uSv/h at 1 m from the package surface
8	Corrosive	5 Kg or 5 L
9.1	Miscellaneous (except PCB mixtures)	50 Kg
9.1	PCB Mixtures	500 grams
9.2	Aquatic Toxic	1 Kg or 1 L
9.3	Wastes (Chronic Toxic)	5 Kg or 5 L

* Note: To be amended to other materials in the near future.

Source: Manitoba Dangerous Goods Handling and Transportation Act, Regulation 439/87: Environmental Accident Reporting Regulation.