D. EDIGER CONSULTING

Manitoba Conservation & Water Stewardship
Environmental Approvals
Attn: Tracey Braun, Director
160 – 123 Main Street
Winnipeg MB R3C 1A5

April 20, 2016

Re: Notice of Alteration,
MidCanada Environmental Services, Soil Treatment Facility
Env. Act Licence No. 3014, Client File No. 5439.00

Dear Ms. Braun:

MidCanada Environmental Services has operated a soil treatment facility adjacent to the R.M. of Ritchot landfill site since 1995. Manitoba Conservation and Water Stewardship issued an Environment Act Licence in 2012 for the continued operation of the facility.

This Notice of Alteration is being submitted, pursuant to Section 14(1) of the Environment Act, in order to expand the service offered at the MidCanada soil facility to include the receipt and treatment of slurry from hydraulic excavation and boring (hydrovac) projects.

Background

The MidCanada soil treatment facility was originally developed to accept and treat soil impacted by petroleum hydrocarbons. Since 1995, the increased use of hydrovac excavation has resulted in a significant increase in the number of requests received by MidCanada for the receipt of hydrovac slurry, some of which may originate on sites with existing soil contamination. Due to the water content in the slurry, the material would not meet criteria to be defined as a soil. Since some hydrovac operations take place on sites containing impacted soil, MidCanada requires the submission of sample results prior to the receipt of hydrovac slurry material. Loads are rejected if the analysis shows that soil in the area where the hydrovac project occurred contains contaminants in excess of the concentrations permitted to be received in the soil treatment facility.

Current practice, when hydrovac slurry is brought to the Ritchot facility, is to construct a temporary bermed cell with a synthetic liner within the soil treatment facility where the slurry is deposited. This is consistent with Manitoba Conservation Guideline Information Bulletin 2006-01E, Operation of Hydrovac Excavation Equipment. Clean clay material from excavations at the adjacent landfill is used to form the berms. The entire slurry containment area is situated above the compacted clay base under the soil treatment facility. Whereas the Information Bulletin describes using the bermed cell as an evaporation pond, MidCanada's standard practice is to combine the slurry with sawdust until the free liquid is absorbed. In a limited number of cases, excess liquid is pumped out of the holding cell and transported to a licensed wastewater treatment facility. The consolidated material from the holding cell is incorporated into an active soil treatment windrow. Once the windrow has been tested and confirmed to meet guideline limits, it is moved to the adjacent landfill to be either used as intermediate cover or accepted as waste.

Proposed Procedure for the Management of Hydrovac Slurry

MidCanada is proposing to develop a permanent hydrovac slurry containment facility within the current soil treatment facility. Operationally the process will remain the same as described in the previous section. The primary difference is that MidCanada is proposing to use two permanent steel structures as the containment method as opposed to the temporary clay berm. The structures are modified shipping containers with a capacity of approximately 100 m^3 each. The end doors have been welded shut to ensure that the units are liquid tight. An earth ramp will be constructed at one end of the container to allow hydrovac trucks access to dump slurry loads. Drawings of the proposed facility and the construction specifications for the loading ramp have been prepared by AMEC Foster Wheeler and are included as Attachment 1 to this document.

As with current practice, MidCanada will continue to require generators of hydrovac slurry to submit analytical results for the soil in the excavation area prior to shipping slurry to the Ile des Chenes facility. Slurry will be accepted if the results meet the soil criteria listed in Section 8 of Licence 3014. All hydrovac loads being received at the MidCanada facility will be weighed in and recorded as per the requirements of Section 35 of Licence 3014.

The slurry is deposited into the storage container where it is mixed with sawdust. The sawdust is sourced from the adjacent landfill site where a number of commercial operations drop off substantial volumes of the material. The use of two slurry storage units will permit the operator to continue to accept additional material while the slurry in one container is in the process of being treated.

The sawdust is mixed with the slurry using an excavator bucket. The addition of the sawdust is continued until no free liquid is visible and the resultant mixture has a consistency similar to a damp soil. The mixture is then removed from the containment structure, using an excavator, and placed on the ground in a designated area adjacent to the containment structure, where it is allowed to air dry.

Once the mixture has dried to the extent there is no visible slumping when it is placed in a pile, it is incorporated into one of the active soil treatment windrows. The windrow will continue to be treated until composite samples of the soil mass, including the hydrovac slurry, are found to be acceptable for removal to the adjacent landfill in accordance with the provisions of Licence No. 3014.

Environmental & Human Health Effects

The addition of hydrovac slurry treatment to the MidCanada Soil Treatment facility is not expected to alter any of the environmental and health effects described in the original Environment Act Proposal for the site.

- Groundwater Quality
  Due to the high water content in hydrovac slurry, any contaminants in the material could potentially migrate through soil into an aquifer if the slurry is not adequately contained. MidCanada is proposing to eliminate this pathway by placing the slurry directly into the steel enclosure. In addition, the entire operation will occur within the soil treatment facility, which has a compacted clay base and is surrounded by a clay berm. The facility in underlain by approximately 15 metres of lacustrine clay, which provides an additional level of protection over the limestone bedrock aquifer.

- Surface Water Quality
  Since the slurry will be received directly into a liquid tight steel enclosure, there is no opportunity for any contaminants in the slurry to impact surface water quality within or outside of the soil treatment facility. Once the slurry has been processed and placed in a treatment windrow, the mitigation measures described in the Environment Act Proposal for the soil facility will ensure protection of surface water quality.

- Air Quality (Contaminants)
  Due to the high moisture content in the slurry, there is a minimal likelihood of the release of any Volatile Organic Compounds (VOC) when the material is received at the facility.

- Air Quality (Noise)
  It is estimated that 2 loads of hydrovac slurry would be received at the facility on an average week, with peak traffic in the range of 5 loads per week. This would be an increase of 14% in traffic volumes over the levels resulting from soil shipments alone. The mitigation measures used for hydrovac shipments would be the same as for soil shipments. No public complaints related to traffic noise have been received by MidCanada since the licence was issued to the facility in 2012.

  The slurry is processed and removed using the same excavation equipment as for the soil treatment operation therefore no noise levels increases are anticipated from this source.

Applicable Licence Requirements

The proposed alteration would impact the following sections of Environment Act Licence No. 3014:

- Section 8 requires that the facility only accept for treatment soils that meet the specified acceptance criteria. Although the term "soil" is not defined in the Licence nor in the Environment Act, the high water content in hydrovac slurry would presumably exclude this material for most generally accepted definitions of a soil. MidCanada would suggest that Section 8 of Licence 3014 be amended to allow acceptance of hydrovac slurry processed in the manner described in this document.
- Sections 24 and 25 require that an Operations Manual be prepared and that the facility be operated in accordance with the Manual. The manual approved by Manitoba Conservation in November, 2013 did not address the management of hydrovac slurry at the facility. If MidCanada receives authorization from Manitoba Conservation and Water Stewardship to proceed with this project, the Operations Manual will be amended as required.

Once the slurry is mixed with sawdust and placed in an active treatment windrow, the remainder of the process is essentially the same as for any other soil shipment and, therefore, the other licence provisions would apply as currently written.

Request for Approval of Alteration

MidCanada Environmental Services is hereby requesting an alteration to the provisions of Licence 3014 to permit the acceptance of hydrovac slurry at the company's soil treatment facility for treatment as described in this document.

Based on MidCanada's experience to date, there is a growing need for this type of service for accepting and processing hydrovac slurry and the company feels the proposed method will ensure that any potential environmental impacts are properly managed. If any additional information is required in support of this Notice of Alteration, please contact me.

Sincerely,

David Ediger, P.Eng.

c. MidCanada Environmental Services

ATTACHMENT 1

HydroVac Bin Construction Details

9 July 2015

Project: WX0469014

MidCanada Environmental Services Ltd.
1090 Kenaston Boulevard
Winnipeg, Manitoba

Attention: Mr. Stephen McCabe

Re: Hydrovac Slurry Bin Tipping Area
MidCanada Class I Waste Disposal Grounds
RM of Ritchot
Ile Des Chenes, Manitoba

1.0 INTRODUCTION

AMEC Foster Wheeler Environment & Infrastructure (Amec Foster Wheeler) was retained by MidCanada Environmental Services Ltd. (MidCanada) to provide design recommendations for a proposed hydrovac slurry bin tipping area.

2.0 CONSTRUCTION MATERIAL AVAILABILITY

It is understood that MidCanada currently possesses two large metal bins in which hydrovac'd material (i.e. slurry) is to be deposited for storage and eventual treatment and removal. It is understood that the Mid Canada's intent is to allow for hydrovac trucks to dump slurry from an elevated platform into the bin. Furthermore, it is understood that access to the top of the slurry bins from an elevated platform between the two bins with an excavator is required to allow for "mixing" of the slurry material with the excavator bucket, as well as cleaning of the slurry bin.

The slurry bins are understood to be about 20 m long, 2.5 m wide and 2.1 m high. The bins are to be placed at the existing ground surface elevation (i.e. excavation of the bin location is to be avoided) and as a result, the tipping area is required to be a minimum of about 1.5 m above the ground surface (assuming typically the dump gate on a standard hydrovac truck is typically no less than 0.6 m from the ground surface).

It is further understood that MidCanada currently possesses a large number of concrete "lock-blocks" (i.e. large concrete blocks with interlocking keys at the top and bottom). The blocks are understood to be about 1.2 m long, approximately 0.6 m wide and 0.6 m high. Construction of the tipping area using a lock-block retaining wall in-filled with clay fill is desired.

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PBN: 899879050PG0015

3.0 DESIGN

In general, to meet the design requirements noted above, a retaining wall constructed of two layers of lock-blocks infilled with clay material obtained from the MidCanada facility, placed and compacted in lifts on a prepared subgrade, has been analyzed. Typical design practices for retaining walls dictate that retaining walls must achieve acceptable Factors of Safety against overturning, translation and bearing capacity failure.

Amec Foster Wheeler has analyzed the design as described above for the criteria noted, and it has been determined that a total of two rows of lock-blocks, placed with the long side perpendicular to the slurry bin and stacked 4 blocks in height, will be required to achieve the required stability while maintaining the size requirements noted. Furthermore, an anchor trench into which the lower rows of lock blocks are placed will be required to provide the required Factor of Safety against translation. The overall width of the retaining wall can be adjusted as needed to suit the desired size of the tipping area. To provide stability, lock blocks will be required extending to the top of the ramp surface in all areas where sloping soils are not provided.

It is understood that an elevated platform constructed of clay between the two slurry bins is also desired. It is assumed that a lock-block wall is not required for this platform as the outside edge can be sloped as required to provide stability. In this regard, the interior side of this platform should be constructed in the same manner as the tipping area ramp, without the addition of granular material, while the exterior side of the platform should be sloped at 4H:1V.

The lock-block wall will create a level platform at the end of the ramp of about 1.8 m in length. This level platform should also be extended level with the top of the lock block wall a distance equal to the required geogrid width prior to sloping of the ramp to prairie grade (i.e. 1 m or 2.5 m depending on the final wall height). Additional length can be added to this level platform as needed.

Figure 1, appended to this report, provides a plan and profile view of the retaining wall, while construction recommendations are provided in Section 4.0 below.

4.0 DESIGN

Based on the requirements noted above, construction of the lock-block retaining wall should proceed as follows:

1) Excavate a trench 0.9 m deep and 2.4 m in width across the width of the tipping area. If lock blocks are to be utilized on the sides of the tipping area as well as the front (adjacent to the slurry bin), the trench should extend along the length of the sides of the tipping area footprint. If space permits the placement of fill at a slope of 4H:1V along the sides of the tipping area, the trench will not be required in this area. The excavation should be undertaken using a backhoe equipped with a smooth bucket (i.e. one without ripper teeth), and care should be taken to ensure that the excavation bottom remains undisturbed.
2) Upon completion of the excavation, the bearing surface is expected to consist of native high plastic clay or clay fill, and should be free from organics or other deleterious materials. The bearing surface should be evaluated by Amec Foster Wheeler prior to placement of the lock blocks. Where poor quality fill or otherwise deleterious materials are found, some sub-excavation and replacement with compacted clay or granular material may be required.

3) A levelling layer of sand about 75 mm in thickness should be placed across the lock block footprint and lightly compacted.
4) The first two courses of lock blocks should be placed in the trench with the long side of the blocks perpendicular to the orientation of the slurry bin. Once placed, the second course of lock blocks is expected to stick up approximately 0.3 m above grade.
5) Surficial organic or otherwise deleterious materials should be stripped from the tipping area and ramp footprint. The exposed subgrade should consist of native high plastic clay or suitable clay fill and should be evaluated by Amec Foster Wheeler prior to placement of clay fill.
6) Place clay fill materials in the tipping area platform and ramp footprint in lifts not exceeding 200 mm (compacted height), compacted to 95% Standard Proctor Moisture Dry Density (SPMDD) up to the top of the exposed lock blocks. Within the ramp area, clay fill materials should be placed and compacted up to a maximum of 450 mm below the final ramp elevation.
7) Clay fill materials within the clay platform area and within areas outside the tipping area and ramp footprints should be placed in lifts not exceeding 300 mm (compacted height) and compacted to 95% Standard Proctor Moisture Dry Density. This clay material should be placed such that its height is relatively even with that of the tipping area platform height at all times during construction. It is recommended that the difference in height between the clay fill in the tipping area / ramp footprint and in the areas outside the tipping area / ramp not be greater than 300 mm at any time during construction.
8) Once the lock blocks and adjacent clay fill are at the same height, place a layer of biaxial geogrid material (Layfield E'GRID 3030 or equivalent) extending between the outside edge of the lock blocks and extending to 1 m past the inside edge of the lock blocks.
9) Place the third course of lock blocks.
10) Place and compact clay fill as described in item 5 until level with the top of the third course of lock blocks. Place additional geogrid at this elevation, as described in item 6.
11) Repeat steps 7 and 8 until the desired wall height is reached. It has been assumed that a total of four courses of lock blocks, extending to 1.5 m above grade (i.e. 0.6 m below the top of the slurry bin) will be suitable, however a fifth row of blocks, extending to 2.1 m above grade, can be placed if required. Where a fifth row of blocks is added, the geogrid (item 7) will be required to extend to 2.5 m past the inside edge of the lock blocks.
12) Once clay fill has been placed and compacted to about 150 mm below the top of the final course of lock blocks, placed a non-woven geotextile fabric over the tipping area platform and ramp footprint.
13) Place and compact a 150 mm thick layer of 50 mm down crushed limestone material over the tipping area platform and ramp footprint such that the limestone is level with the final course of lock blocks. 50 mm limestone should be compacted to 98% SPMDD.
14) Place an additional course of lock blocks over the outer-most row of lock blocks, oriented parallel with the orientation of the slurry bin to act as a curb for hydrovac trucks to use as a backing guide. This course should also extend along the sides of the tipping area where sloping of the fill is not to be implemented. (Note – this will provide a curb 0.6 m from the edge of the hydrovac bin, however the location of the curb can be adjusted to suit the expected hydrovac truck configuration that is to utilize the tipping area).
15) Place and compact (to 98% SPMDD) a 150 mm layer of 50 mm down crushed limestone across the entire tipping area platform and ramp footprint, as well as over the lock-blocks (except for the lock block acting as a curb).
16) Place and compact a 150 mm layer of 20 mm down crushed limestone across the entire tipping area and ramp area, including over the lock-blocks (except for the lock block acting as a curb). 20 mm limestone should be compacted to 100% SPMDD.

The slurry bin can be placed either prior to or after construction of the overall retaining wall, however to allow for construction equipment access to all areas of the wall during construction, it is recommended that the bin be placed after the wall is fully constructed.

Further to the above, it is understood that the platform between the lock block bins is to be constructed of clay only. While this is acceptable from a constructability standpoint, it is cautioned that without any granular material there is a high potential for rutting and other disturbance to the platform surface resulting from the excavator. Such rutting could result in areas where water could pond, and thus reduce stability of the platform. Should this occur, re-grading of the platform will be necessary to ensure that all ruts are removed from the platform surface. The platform should be sloped at a minimum 3% to allow for water drainage. Alternatively, gravel could be placed on the surface of the platform, and in this regard significantly less re-grading of the platform would be expected. If gravel is to be placed on this platform, it should be placed as per items 13, 15 and 16, above.

4.0 CLOSURE

Should any further information or assistance be required, please do not hesitate to contact the undersigned.

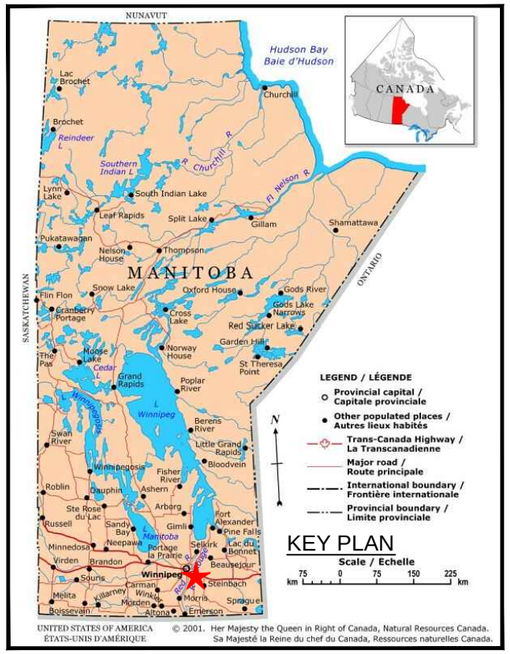
Yours truly,
AMEC Foster Wheeler
Environment & Infrastructure

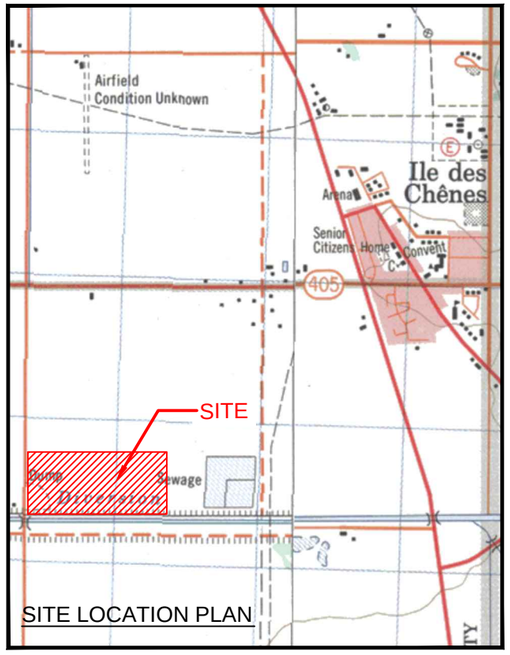
Jorden Wiwcharyk, P.Eng.
Geotechnical Engineer

Reviewed by:

Harley Pankratz, P.Eng.
Vice President; Eastern Prairies and Northern Alberta

Attachments: Figure 1 – Retaining Wall Profile and Plan View





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LEGEND:

CLIENT LOGO

CLIENT:
MIDCANADA ENVIRONMENTAL SERVICES LIMITED

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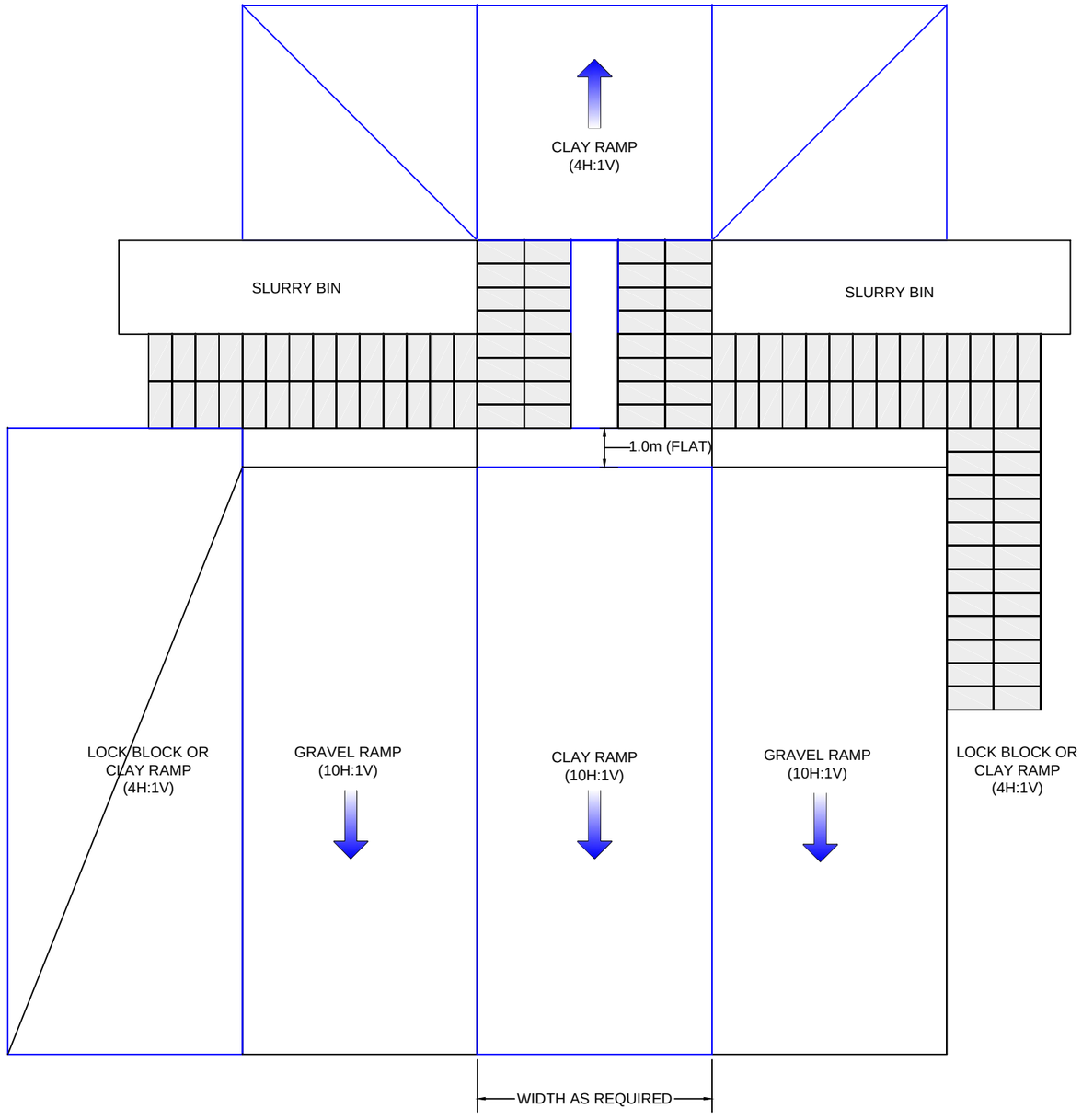
DWN BY: MD
CHK'D BY: HP
DATUM: NAD83
PROJECTION: UTM Zone 14 U
SCALE: AS SHOWN

HYDROVAC SLURRY TREATMENT BINS
SOIL TREATMENT FACILITY
1373 BERNAT ROAD
R.M. OF RICHOT, MANITOBA

HYDROVAC SLURRY BIN TIPPING AREA APPROXIMATE LOCATION

DATE: APRIL 2016
PROJECT NO: WX0469014
REV. NO.: A
FIGURE NO: FIGURE 1

PLAN VIEW



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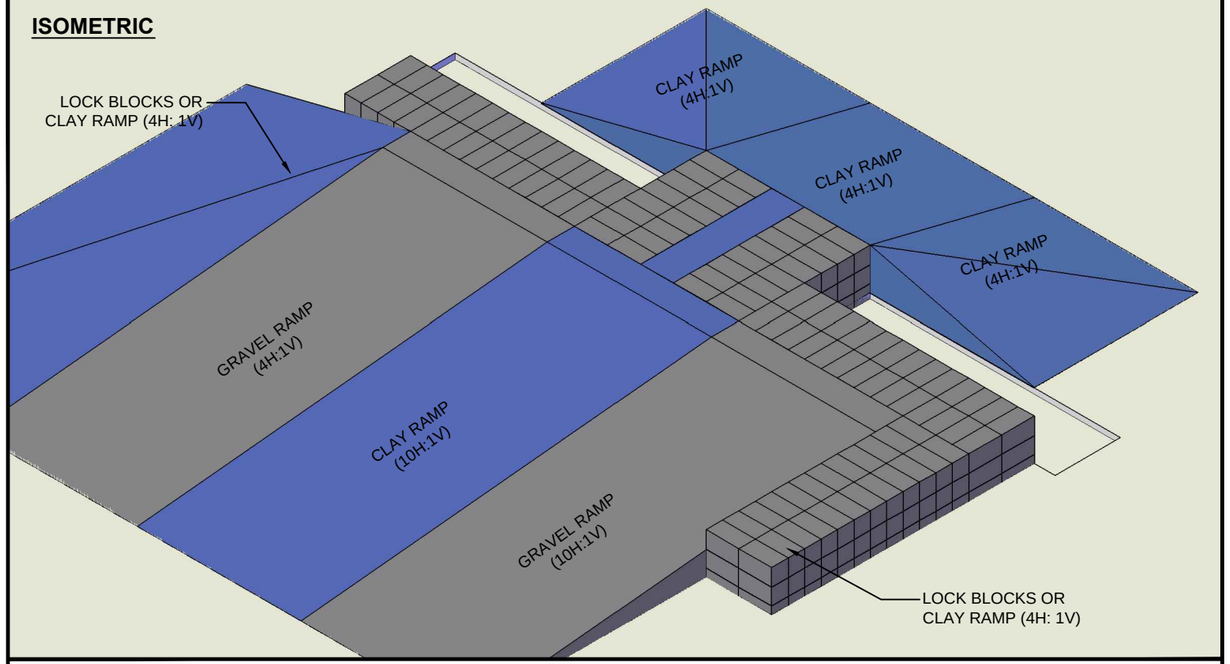

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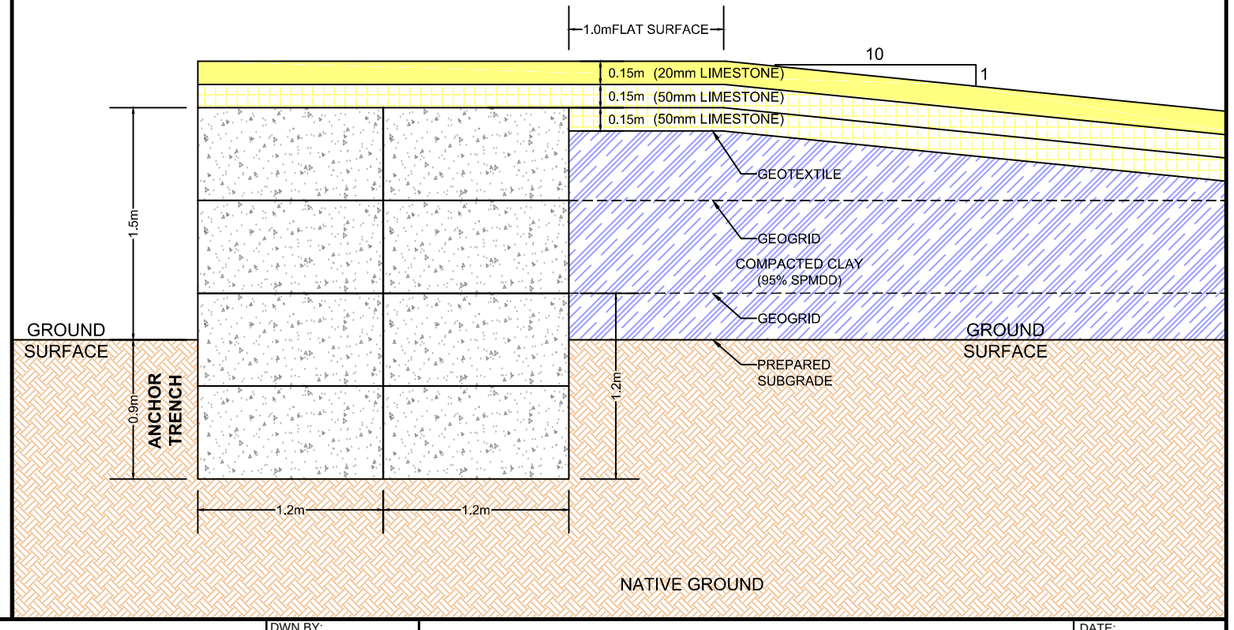

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LEGEND:

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amec foster wheeler

DWN BY:	MD
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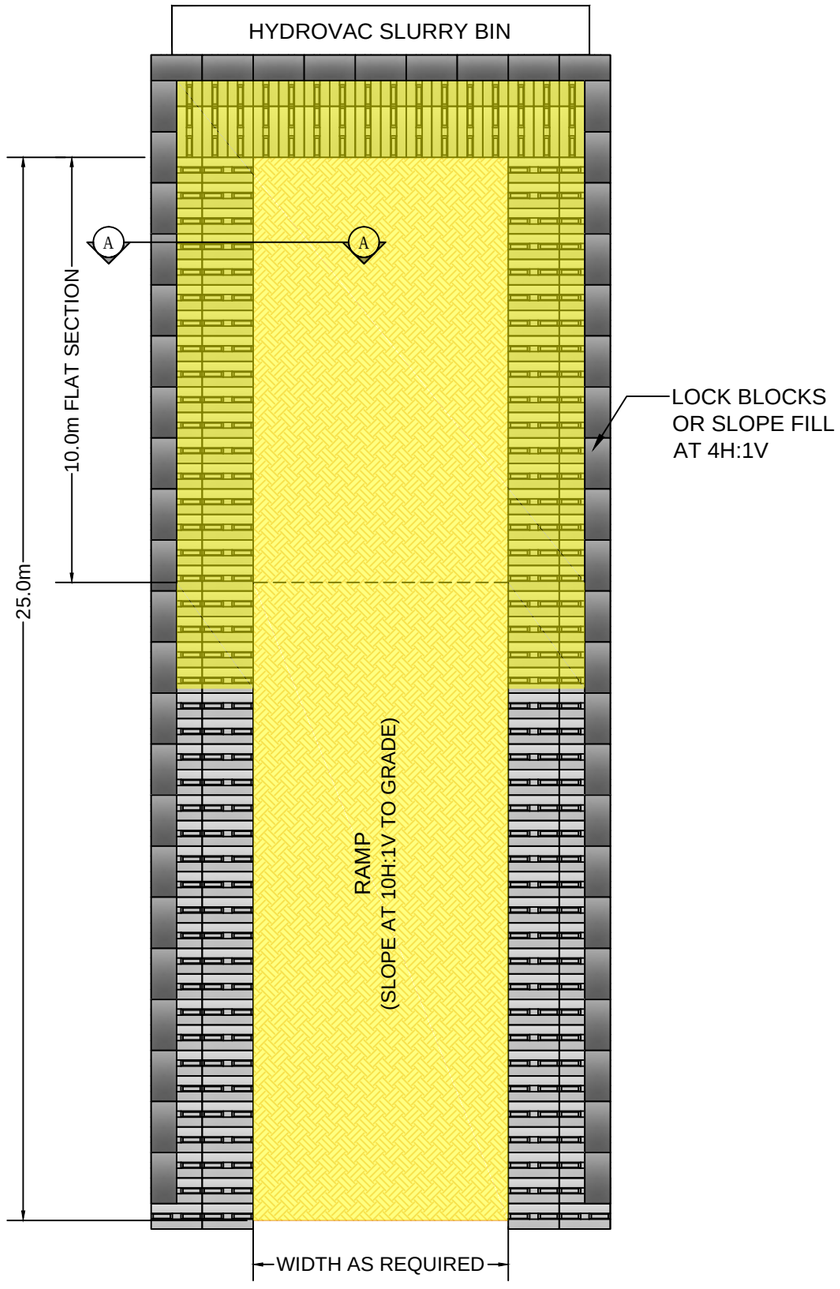
SCALE:	AS SHOWN

HYDROVAC SLURRY TREATMENT BINS
SOIL TREATMENT FACILITY
1373 BERNAT ROAD
RM OF RICHOT, MANITOBA

RAMP DETAIL

DATE:	APRIL 2016
PROJECT NO:	WX0469014
REV. NO.:	A
FIGURE NO:	FIGURE 1

PLAN VIEW



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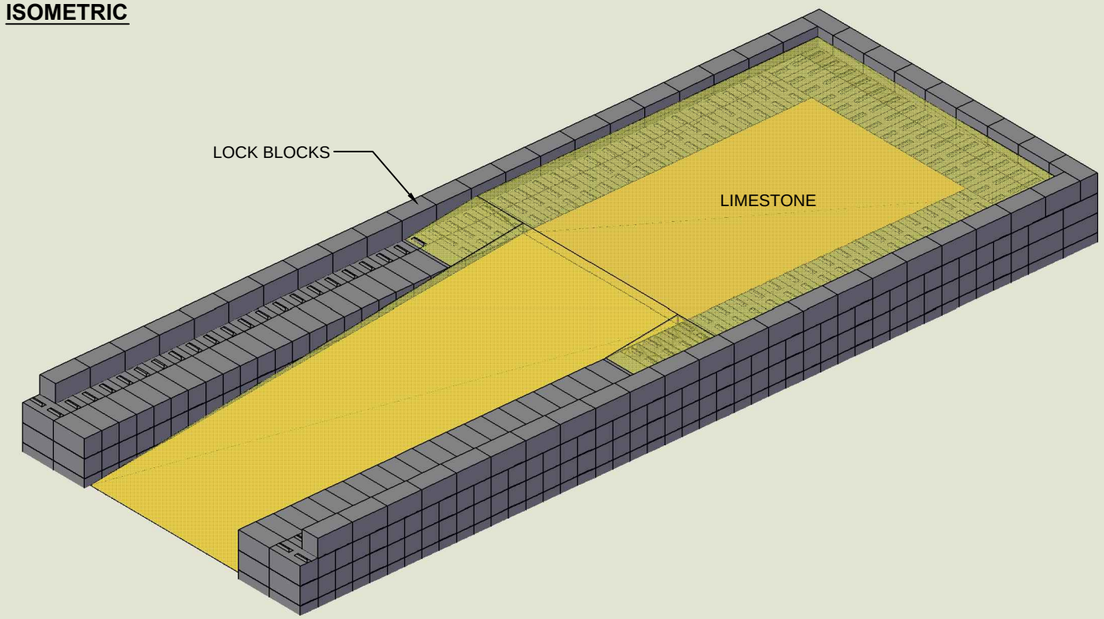

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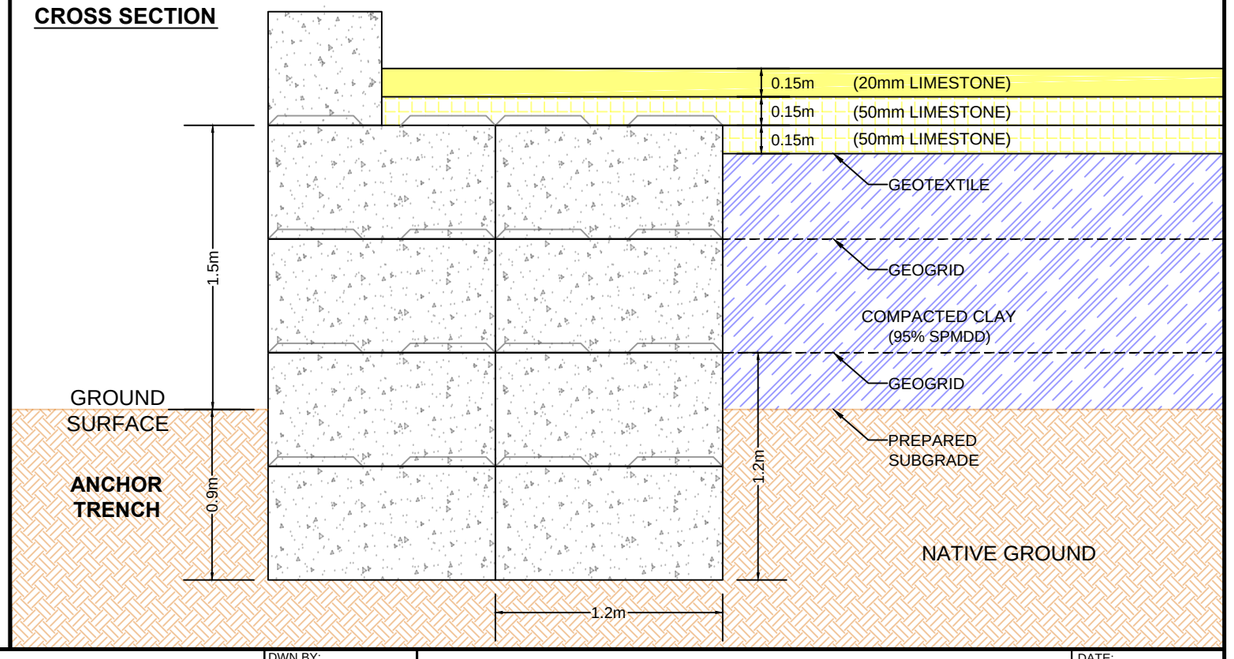

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