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Town of Fort Frances Recycle Depot & Transfer Station Upgrades

CIF Project Final Report



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Introduction

The Town of Fort Frances recycle program has evolved tremendously since its inception. The original program consisted of multi-stream curb side collection with all materials sorted at the curb side into specialized recycling trucks. From there we moved to single stream collection in the same trucks which transitioned into single stream collection by contractor. Originally all materials were brought to a rented building to await transportation to the MRF. The biggest change to the program has been the introduction of a recycle depot for 24 hours a day 7 days a week access to recycling services and the establishment of a municipally owned transfer station for the gathering of depot and curbside collected materials.

This change, however, has not been without its share of challenges. The Town started with the introduction of 4 open front containers to the public to deposit their co-mingled recyclables into at a piece of property adjacent to the Public Works garage. This allowed for easy access to the depot for the Public Works staff to maintain and empty the bins. The public response to this depot was so great, that there was no way for the Public Works Staff, during regular business hours, to maintain the bins. This strong uptake in the depot resulted in numerous call outs for the Public Works Staff to empty the bins after hours and additional man power required to clean up the overflow caused by full bins and the time to load and compact the walking floor trailer for transport to the MRF. The Town of Fort Frances was looking for a solution to this never-ending problem to help to continue to provide and enhance depot collection services while easing the manpower burden to the Public Works Staff.



Figure 1- Town of Fort Frances Recycle Depot and Transfer Station

Predevelopment Conditions

The single stream drop-off recyclables depot, which operated 24 hours a day, had 4 - 8 cubic yard bins which are full every day of the week (5 days/ week) and must be emptied usually twice per day on week days. The depot is open on all weekends including long statutory holiday weekends thus every Monday or Tuesday morning since Jan of 2011, the 4 bins were overflowing with recyclables left on the roadway and beside the bins. It took 2 laborers & 1 loader operator 1.0 to 2 hours to clean-up the overflow recyclables every Monday or Tuesday morning to get the depot back in service. This process was very time consuming and tied up staff from performing other duties. The original bins were built to attach to the front implement connection on the Town's wheel loaders. When the bins were filled a loader would pick up each bin and move them to the transfer station building and dump them. The loader would make this move 4 times, once for each bin carefully, so as to not spill any materials out of the, usually, overflowing bins. Into the transfer station building was also being deposited the curbside collected materials. The Town utilizes the same contractor for Blue Box collection as solid waste, and this contractor uses the same rear load compactor truck for both collections, so the materials deposited from curb side are partially compacted. The loader would then take that material, combined with the curbside collected materials, and load them into a walking floor trailer from a temporary loading ramp. The loader would do the best it could to compact the materials in the walking floor trailer for transportation to the MRF in Winnipeg Manitoba. The Town was very interested in exploring alternatives to this method as it was very labour intensive and very costly. In 2012 the costs were \$368.68 per tonne due to the inefficient way the BB recyclables were handled.



Figure 2 - Typical Predevelopment Conditions after a Weekend

By installing two new stationary compactor bins complete with four 40 cubic yard roll off containers and utilizing a roll off container truck capable of hauling 2- 40 cubic yard roll off containers to the Winnipeg MRF it was anticipated that there would be a positive financial impact

on the on-going operating costs. The predevelopment monthly operating costs of \$8,899 would be reduced to \$3600 per month or a saving of \$5299 per month or \$63,588 per year. It was anticipated that there will be no labour and front-end loader required to empty the depot stationary compactor bins and to load and attempt to compact the top loaded walking floor trailers. Also, the fact the haulage rate to haul BB recyclables to the Winnipeg MRF will be reduced to approximately a \$ 100 per hour because roll off trucks are cheaper than walking floor trailers. Based on a 12 hour per roundtrip to the MRF and 3 loads per month it was estimated that there would be a reduction in haulage cost equaling \$22,776.84.

Changes

Through the assistance of the Continuous Improvement Fund the Town of Fort Frances was able to revamp our recycle transfer station and depot to reduce operating costs and provide better service to the residents of the Town of Fort Frances. A 15hp stationary compactor was installed at the depot to allow for the drop off of blue box materials by the public with a higher capacity than the previous bins. This compactor is remotely monitored, by way of security cameras and tablets, by the Town Stores Keeper during regular business hours and the Fort Frances Municipal Airport Staff after hours. This helps to ensure that only proper materials are deposited in the compactor and that appropriate staff can be dispatched to the site should the compactor become plugged or have other operational issues prior to it making a larger mess.

The temporary loading ramp was replaced with a larger ramp with engineered concrete retaining wall and concrete driving surface. This was completed to accommodate a second 15hp stationary commercial compactor specifically designed for the collection compaction truck to deposit materials directly into. This would save the manpower required to move material from the transfer building to the compactor. This would be in place of the old system where materials were loaded into a walking floor trailer. The Town considered the use of a compaction trailer but opted for a second compactor since the 40 yard roll off containers used with this compactor are the same as those for the depot compactor containers.

Implementation Struggles, and Lessons Learned

The implementation of these changes to our recycle depot and transfer station were not without issues and struggles. The installation of both compactors went very well as did the construction of the loading ramp. The public compactor had issues with connecting to the remote monitoring portal. Our electrical contractor and the supplier worked together in concert with our IT Manager to work out the bugs in the communications equipment and get it mounted in a location that was suitable for its use. In addition, a cabinet had to be fabricated that was insulated and heated to allow for winter time operation of the remote monitoring equipment.

The original installation of the commercial compactor was far more problematic. The original top of the compaction unit at the loading ramp was too high and impacted the rear of the rear load compaction truck which handles our curb side collection. This required modifications to happen to the base of the hopper to allow for the truck to back up into the unit. The cage on top of the compactor, which is meant to catch the waste and direct it into the compactor, did not project far enough onto the ramp and when unloading into the compactor, material would fall past the cage resulting in either the collection contractor or Town Staff having to clean up part of the load meant for the compactor. Once these issues

were resolved it became apparent that the original 15hp compactor was not suitably sized to handle the large quantity of partially compacted materials being deposited out of the compaction truck from curb side collection. As a result, a larger compaction unit had to be brought in.

The new larger 30hp compaction unit was installed in 2016 with 2017 being the first year of continuous use. This compaction unit can handle the materials straight from the collection truck, however the container will only accept one and one-half loads of material before being full. This results in a partially filled hopper or partially filled truck. To change the bins with a partially full hopper results in a large amount of material being spilled onto the ground and the truck cannot effectively stop emptying part way through a load. This results in the second load being deposited in the Recycle building and loaded into the hopper by wheeled loader and Public Works Staff. The addition of the commercial compactor has not provided the man power relief we were expecting that it would, however the manual loading is less frequent and takes less time, and the operator has the ability to manage the quantity of materials being transported better when the bin is filled up in this fashion.

Post Development Conditions

With the depot and transfer station now working over the past 12 months, Operations Staff have also been working to streamline the process and maximize the benefit of this new equipment. The public use of the depot has been fantastic with many users daily attending the site. The cleanup has been greatly reduced around the site. The manpower to manage the depot has also been greatly reduced as there is no need to handle the bins multiple times per day. Currently we see a need to switch out full 40 yard bins from the public compactor about twice per week, meaning that the public has embraced the use of this depot.



Figure 3 - The New Commercial and Public Compaction Units



The streamlining of our material handling procedures has freed up a tremendous amount of time and manpower, in addition our transportation and processing agreement with Emterra, the Winnipeg MRF operator, have allowed for a single point of contact for the handling of all BB materials.

Presently Fort Frances is the largest community in the Rainy River District and is surrounded area with 16 municipalities and First Nation Communities with a population of less than 5000 within one hour driving distance from the depot/transfer station. In March of 2011, the Town contacted these communities to determine if there was any interest in utilizing the transfer station to enhance recycling services for their communities. Most communities were interested in enhancing recycling services, but once the costs were explained to them no communities were interested. As of April 1st, 2013, the Ministry of Natural Resources(MNR,) as a result of closing the MNR landfill site which serviced the community of Mine Center, is dropping off BB recyclables at our transfer station. The Town signed a ten-year agreement with the MNR. In addition the community of Naotkamegwaning First Nation has reached out to the Town to access both our landfill as well as our recycling program as their landfill is closing and they are looking for a long-term agreement.

Financial Outcomes

The Town of Fort Frances pays close attention to the costs associated with our recycling services for, not only reporting to RPRa, but for accurate budgeting as well. Table 1 shows the costs associated with the tonnes collected in our recycle program, both curb side and at the depot from 2012 through the end of 2017 which represents the first full year of operation of the commercial compaction unit.

| | Material Collected (t) | Collection | Transportation | Processing | Labour & Equipment | Other Costs* | Total Cost | Cost per tonne |
|-------------|-------------------------------|-------------------|-----------------------|-------------------|-------------------------------|---------------------|-------------------|-----------------------|
| 2012 | 498.61 | \$71,706.00 | \$48,635.60 | \$15,216.62 | \$46,073.71 | \$2,195.70 | \$183,827.63 | \$368.68 |
| 2013 | 490.57 | \$73,140.00 | \$46,698.18 | \$13,250.11 | \$41,877.68 | \$1,204.62 | \$176,170.59 | \$359.11 |
| 2014 | 490.81 | \$73,498.52 | \$52,500.00 | \$19,156.90 | \$40,229.75 | \$1,189.90 | \$186,575.07 | \$380.14 |
| 2015 | 501.66 | \$75,291.12 | \$64,082.42 | \$23,933.73 | \$54,096.28 | \$4,837.03 | \$222,240.58 | \$443.01 |
| 2016 | 477.63 | \$75,291.12 | \$81,675.00 | \$18,812.94 | \$35,659.23 | \$23,078.69 | \$234,516.98 | \$491.00 |
| 2017 | 518.20 | \$75,291.12 | \$78,549.57 | \$14,525.72 | \$31,519.43 | \$1,287.35 | \$211,173.19 | \$407.51 |

*Other costs includes electrical costs, building materials, overhead, Roll Off Bin Movement

It can be seen that in 2015 when the transition occurred from Cascades for processing and Manitoulin for hauling to Emterra for both hauling and processing there was an increase in costs to the Town for that year as the program got established with the new service providers.

It can be noted that the overall cost for the Town to operate the recycle program is increasing, however those cost increases are easily defined. The Town has seen an increase in the transportation costs for hauling the bins, however the commercial compaction unit was having issues getting to high compaction rates in part of 2017 resulting in paying for lighter loads. In 2012 we hauled 33 loads equating to 15.11 tonnes per load while in 2017 47 loads were moved which works out to 11.02 tonnes per load. With time we have improved the way we compact in that unit which hopefully will mean an increase in tonnes per load in 2018 and beyond. There has also been a marked increase in the electrical consumption relating directly to the use of the compactors. Ways to address this will be reviewed moving forward as well to optimize those costs. Where we have truly seen a decrease in costs is in the labour required to operate this depot. Again, as we streamline our process internally to handle these changes it is anticipated that those costs will continue to decrease. With the 6-year average collection at 496.25 tonnes/yr, the years since the introduction of the public compaction unit show an increased uptake in the use of the recycle depot by residents. This trend is looking to carry into 2018 as well.

The original proposed capital expenditure for this update to the systems was pegged at \$218,275.20 during the Expression of interest phase with CIF. The actual final capital cost for this upgrade was \$262,899.83 including the Town's portion of the works to upgrade the commercial compaction unit. This is a \$44,624.63 budget overage for the works that were completed.

Conclusions

The introduction of two stationary compaction units have been a welcome addition to the Town of Fort Frances both from the residents and the staff working in the Operations and Facilities Division. The impacts financially have not been as good as originally anticipated, however the systems are still having the bugs worked out to optimize efficiency from both the Town's end and the compactor end. With time, it is anticipated that the realizations will come through. The major limitation for this system and something that would be considered in a different manner if the Town was to restart this upgrade process is to give more consideration to the size of the loads coming to the commercial compactor from curbside collection. The fact that the commercial compactor can only take a load and a half from the compaction truck really impacts the Town's ability to limit their manpower inputs to the recycling system.