

**Date:** March 17, 2015  
**To:** Green For Life  
**From:** Project Team  
**Subject:** Rocky View County Operations Center Design Basis  
**Project No.:** 150155

---

## INTRODUCTION

Green For Life (GFL) has purchased a parcel of land east of Calgary, Alberta in Rocky View County. This Design Basis Memorandum presents information pertaining to the proposed operations. The Design Team will use this Design Basis information to prepare conceptual site designs. The proposed operations will include a new transfer station; parking areas for employees; parking areas for trucks; staging areas for containers; and a maintenance shop, office and worker amenities. We are approaching this project from a utilitarian and functional perspective recognizing that it is an industrial development. Aesthetics features will be considered in the design where appropriate.

The information presented herein was derived primarily from the following sources:

- Conference calls held on January 13, 2015 and February 9, 2015 with GFL, Dillon, and Cornerstone.
- Area Context Map (aerial map) prepared by b&a Planning Group (November 2014).
- FRONTIER INDUSTRIAL PARK PHASE II CONCEPTUAL SCHEME, Municipal District of Rocky View, Department of Planning and Community Services, April 28, 2009.

## 1 ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT PERMITS

To the best of our knowledge, for the existing site, there are no existing environmental permits pertaining to solid waste or recycling. However, for this proposed facility, a notification will be made to ESRD for the proposed Waste Management and Storage Facility.

## 2 EXISTING SITE CONDITIONS

The parcel that is being considered for the solid waste facility is located on the northern side of Township Road 240, approximately 1.6 km due east of Route 201. The site area is approximately 4 ha.

From Route 201, access to the site is provided via two roads, over a distance of approximately 2.5 – 3.0 km. Travelling from Route 201, vehicles would be driven east on Peigan Trail, turn south on 84 Street SE, east on Frontier Road, and turn south on Frontier Crescent. The site is then approximately 0.2 km straight ahead.

Adjacent use of the properties is described as follows:

- To the north and northeast there appears to be commercial/light industrial buildings and trucking operations.
- To the east there is vacant land.
- To the south, the property fronts on Township Road 240. Immediately south of Township Route 240 are CP railroad tracks. South of the tracks is a large industrial property.
- To the west, the parcel fronts on a rectangular water body. To the west of the water body are several industrial buildings and trucking operations.

Based on Google Earth imagery, the topography appears to be relatively flat with an elevation differential of approximately one metre. Stormwater handling on the site will be consistent with the stormwater program instituted for the entire subdivision and designed by Westoff Engineering. Further details will follow in subsequent design stages.

Electricity, natural gas, and communication utilities are expected to be available along Frontier Crescent and will be utilized for the proposed construction.

### **3 EXISTING OPERATIONS**

The site is presently vacant with no solid waste or recycling operations.

### **4 PROPOSED DEMOLITION**

To the best of our knowledge and understanding of the site, no demolition is required for the development of the site.

### **5 PROPOSED SITE CONSTRUCTION**

#### **5.1 Sitework**

The site entrance and exit will be constructed on Frontier Crescent. One point of access to the site would be constructed. Separation of cars (employees, visitors) and collection trucks will be provided upon entering the site.

Sitework will include grading, excavation required for utility construction, construction associated with roadways (asphalt and concrete pavement, pavement markings, curbing, gravel surfacing, and signage), stormwater management and landscaping.

The site improvements will accommodate the parking of vehicles and the placement of containers (roll-offs, front loader), single unit trucks, and tractor trailers. Roadways will facilitate the maneuvering requirements of these vehicles and access to the stored containers.

Surfacing will include:

- Bituminous asphalt concrete pavement for truck driving, parking, maneuvering, and roadways areas.
- Portland cement concrete aprons will be provided at door openings for the transfer station and the maintenance shop building.
- Container parking/storage areas will be gravel surfaced or surfaced with compacted asphalt millings (recycled asphalt).

Minimum roadway design parameters are:

- 5.5 meters wide, 1-way pavement width.
- 8 meters wide, 2-way pavement width.
- Adjacent to the tipping floor doors and at loading docks, the absolute minimum maneuvering area width for vehicles backing-up and turning 90 degrees is vehicle length plus 5 meters, with a preferable maneuvering area width of twice the vehicle length.
- Maintain inside roadway curve radius equal to the vehicle length (preferably less).
- Provide pavement widening at curves commensurate to the vehicle type and other design requirements.
- Container, truck, and trailer spaces will be actual length plus 2 meters, and 4 meters in width (in addition to maneuvering requirements). Projected vehicle quantities are presented in Section 10.4.

## **5.2 Water Service**

Domestic water service is not available. Potable water will likely have to be trucked into the site, although possibly a well could be constructed. A fire water loop within the site would provide water to the building and to on-site fire hydrants. The number of hydrants will be determined in consultation with the fire marshal/code enforcement official. A water storage tank dedicated to fire protection may also be required.

## **5.3 Electric Service**

The site is expected to be provided with a single point of incoming electric service; the connection location will be determined as the design progresses. Overhead conductors, mounted on poles, will not be used to distribute power within the site. Electrical service and distribution will be provided through underground conductors and pad mounted transformers where required. Electrical evaluations will include transformer ownership and metering preferences.

## **5.4 Sanitary Sewer**

Sanitary sewers are not available to the project site. A connection will not be allowed to the force main that is proposed to be constructed through the property. A wastewater holding tank will likely be used for domestic wastewater and water that is used for the maintenance and transfer station operations. The tank will be pumped as required and hauled off-site for treatment and disposal.

## **5.5 Stormwater**

Stormwater will be directed through a system of catch basins, drainage pipes, and stormwater management controls as per the requirements for the development of the site. It is anticipated that Westoff Engineering will be retained to provide input on the stormwater design.

## **6 PROPOSED SCALE(S) AND SCALEHOUSE**

The need for and the location of Scales and the Scale House will be determined during the planning phase of the project.

Outline specifications for new scales that would be used on the site include:

- 90-tonne capacity.
- Above ground scale type.
- Scale deck: 21.2 meters long by 3.3 meters wide.
- Hytronic load cells preferred, electronic as alternate (Emery Winslow, Rice Lake, Canadian Scale Co.).
- Scoreboards for truck weights will be provided for direct driver viewing.
- Computer system and software compatible with that utilized by GFL.

Maximum queuing space will be provided on-site for inbound vehicles that will be driven to the transfer station.

The Scale House may be a stand-alone structure or be an office within the Operations Center discussed in Section 9.

## **7 FUEL**

Underground fuel storage tanks are not being contemplated for this site. Space will be allocated on the site for a fuel island that would include an above ground 30,000 liter fuel tank and four dispensing pumps.

## **8 TRANSFER STATION**

### **8.1 Architectural**

The building will be designed as a pre-engineered metal building. Three tipping floor access bays and two bays for two stationary compactors will be provided. The floor area will be designed to accommodate the handling of up to 750 tonnes per day. The typical range of square footage ranges from 15 square feet per daily tonne to 20 square feet per daily tonne. Consideration is given to the type of transfer operations, type of recycling operations, ability (through permitted operations) to store material overnight on the tipping floor, hours of operation, hourly arrival of material, and other factors.

This building will be designed with an expandable end wall to allow for building expansion for future growth of either the transfer station capacity or the addition of a recycling operation.

The roofing material will be galvanized steel roof panels. Wall panels will be constructed of steel with a protective coating. Translucent panels can be considered in the walls or roof to provide some natural lighting.

The building eave height should be approximately 10.5 meters. Interior clearance to the underside of structural steel should be approximately 9.75 meters. The interior should be a clear-span framing system design.

The tipping floor doors (approximately 8 meters wide, 8 meters high) will be electrically operated steel roll-up doors, with exterior weather hood enclosures. Personnel doors will be provided to meet building code requirements and operational requirements.

Employee facilities will be per building code. It is envisioned to include a unisex washroom. Other employee facilities will be located at the Operations Center.

One utility room will be provided for electrical and telephone service and for the fire suppression equipment.

The interior finish of the transfer station will be exposed building steel (primary framing, secondary members, and panels) and roof insulation (for example, vinyl-faced roll insulation or freezer panels). Interior wall and roof underside will be finished with a light color to enhance light reflection. Steel shall be appropriately painted in addition to factory applied prime coat.

## **8.2 Structural**

At this time, without geotechnical information for the site, the type of foundation system cannot be specified.

Pushwalls will be a minimum of 4.5 meters high and constructed of concrete and steel. The pushwalls will be freestanding, constructed a maximum of 1 meter from the building line. With concrete pushwalls, the lower 1 meter of the wall should be constructed with embedded steel plate. Kneewalls, if used between the tipping floor and the transfer trailer driving lanes, should be constructed a minimum of approximately 3 meters high with steel plate protection on vertical and horizontal surfaces. Steel plate walls will be used around the compactor feed hoppers.

For the concrete floors, the mix design will be specified during the design phase of the project, although generally the mix design will consist of high cement content, hard aggregate, sacrificial thickness, and steel fiber reinforcement. Rubber edges on the wheel loader buckets should be used to minimize floor wear.

## **8.3 Ventilation**

A minimum of six air changes per hour should be provided in the transfer station. Mechanical ventilators can provide this air change rate.

The system to control dust and odor will be developed during the design process to meet environmental regulatory requirements.

#### **8.4 Heating**

The transfer station will not be heated. The utility room and the washroom will be heated.

#### **8.5 Air Conditioning**

Air conditioning will not be provided.

#### **8.6 Plumbing**

The tipping floor will be sloped toward the trailer loading area to eliminate the need for trench drains in the tipping floor. If needed, grinder pumps to control liquids released during the loading operations can be installed.

Domestic wastewater from the washroom will be directed by gravity or pumping, to the holding tank, as discussed in Section 5.4.

#### **8.7 Fire Protection**

Fire protection will be designed to meet code. A sprinkler system will be provided within the transfer station. The room for the fire suppression equipment will include the air compressor, valving, metering devices, and piping.

Portable, hand-held type ABC fire extinguishers will be located throughout the facility, as required by applicable codes and regulations. Fire hose and reels will be provided within the transfer station tipping floor and at the trailer loadout area. On-site water storage requirements will be reviewed at the detailed design stage.

#### **8.8 Electrical**

Electric service to the site is expected to be 120/208 VAC, 3-phase, four wire supply. Amperage of the electrical service will be determined as the design progresses. The service entrance panel boards and electrical equipment will be located in the utility room. Power will be distributed within the building for primarily lighting loads, stationary compactors, and other needs (washroom water heater, receptacles, etc.). Transfer station lighting will be provided by metal halide high bay fixtures and luminaries or LED fixtures. Fast re-strike fixtures will also be provided to maintain appropriate lighting levels for employee safety after a power interruption, as well as through battery-powered safety lighting.

The trailer loading area will be provided with up to twice the lighting level of the tipping floor area, as well as the first 5 meters within the transfer station (just inside the main door openings), to improve the lighting levels for drivers proceeding into these building areas. Lighting level in the tipping area will be a maintained level of 80 lux. The transfer area will have lighting levels of 80 lux.

Power will also be provided for site lighting and vehicle engine block heaters from this electrical room. Night-time operations areas will be provided with 80 lux; whereas, security lighting will provide maintained lighting levels of 30 lux.

### **8.9 Safety Equipment**

Safety equipment, including signage, hand-held type ABC fire extinguishers, eye wash/showers, and first aid cabinets will be provided, in addition to other GFL required safety equipment, as required by applicable codes and regulations.

### **8.10 Loading Dock**

A loading dock will not be constructed with the initial build-out. If required for loading out of recyclables, the dock height will be 1.27 meters. Dock levelers will be adjusted manually and set within a concrete "pit" within the loading dock area. Dock bumpers will be provided, as well as articulating trailer lighting fixtures.

## **9 MAINTENANCE SHOP AND OPERATIONS CENTER**

The following descriptions pertain to the combined Operations Center and Maintenance Shop building.

### **9.1 Architectural**

The building will be designed as a pre-engineered metal building. Some architectural features will be compatible with the transfer station, recognizing that this building will be a totally different use and occupancy than the transfer station.

The Operations Center will have a combined floor area of approximately 10,000 square feet (5,000 square feet on each of two floors). The Operations Center will include offices, a meeting/break room, dispatching, accounting, and customer service representatives. The Portable Toilet Operations (PTO) will be included within the maintenance shop floor plan. This operation will include one bay at the end of the shop area. The maintenance shop and PTO area will be joined with the Operations Center. The maintenance shop floor areas will be further developed as part of the concept plan development work scope.

The roofing material will be galvanized steel roof panels. Wall panels will be constructed of steel with a protective coating, with some other architectural finishes/treatment. Double glazed skylight and windows will be considered for the walls and roof to provide some natural lighting in the maintenance shop area.

The building eave height should be approximately 9.0 meters. In the shop area, the interior clearance to the underside of structural steel should be approximately 8.5 meters. The interior should be a clear-span framing system design. In the Operations Center, there will be two floors of space for operations and employee facilities.

Personnel doors will be provided to meet building code requirements and operational requirements. The maintenance bay doors (approximately 6 meters wide, 8 meters high) will be electrically operated steel roll-up doors, with exterior weather hood enclosures

### **Shop Employee and Collection Vehicle Employee Facilities**

Employee facilities will include a break/meeting room, men's washroom, women's washroom, and janitor's closet. The break room will include a counter, base and wall cabinets, sink, microwave oven, 2 vending machines, and a refrigerator. The men's and women's washrooms will include appropriate plumbing fixtures with separate locked shower(s). The janitor's closet will include a mop sink, shelves for janitorial supplies, and a water heater. Separate locker rooms will be provided with 60 lockers for men and 20 lockers for women.

Utility rooms will be provided for electrical and telephone service/computer server and for fire suppression equipment.

Interior walls will be constructed of concrete block. Ceiling construction will be exposed grid lay-in acoustical panel in the break room, men's room, women's room, and hallways. The underside of the roof construction will be exposed in the janitor's closet, electric room, and mechanical room.

Interior finish of the 2.75 meter high walls in the break room will be paint. The floor will be vinyl tile. The men's room, women's room, and janitor's closet will have ceramic tile walls (up to 1.75 meters) with paint above the tile surface. Floors will be tiled (ceramic). The electric room and mechanical room will have concrete block walls, exposed roof underside, and sealed concrete floors.

### **Shop Finishes**

The interior finish of the shop will be exposed building steel (primary framing, secondary members, and panels) and vinyl-faced roof insulation. A painted masonry interior wall to a height of 2.2 metres around the perimeter of the shop area will provide a durable finish. Interior wall and roof underside will be finished with a light color to enhance light reflection. Steel shall be appropriately painted in addition to factory applied prime coat.

Panic hardware will be provided for steel egress doors. The doors will have wired-glass vision panels.

### **Operations Center Finishes**

The interior finishes will be vinyl floor tiles, selective use of ceramic tile, painted gypsum board walls, and lay-in acoustical ceiling tiles.

The entrance door will be glass with an aluminum frame.



## **9.2 Structural**

The building will be a pre-engineered metal building. Foundations and the ground floor will be concrete. The second floor will be concrete filled steel deck pan or precast floor panels.

## **9.3 Ventilation**

Employee facilities will be mechanically ventilated according to code requirements.

A minimum of six air changes per hour should be provided in the transfer station.

## **9.4 Heating**

Heating will be provided in the maintenance shop through the use of high intensity infrared heaters. A ground-mounted HVAC unit (electric or natural gas) will provide heat, ventilation, and air conditioning in the Operations Center.

## **9.5 Air Conditioning**

Air conditioning will only be provided in the operations center and staff amenity areas (not the vehicle maintenance area).

## **9.6 Plumbing**

Domestic wastewater will be directed by gravity or pumped to a holding tank, as discussed in Section 5.4.

## **9.7 Fire Protection**

Fire protection will be designed to meet code. A sprinkler system will be provided. The room for the fire suppression equipment will include the air compressor, valving, metering devices, and piping.

Portable, hand-held type ABC fire extinguishers will be located throughout the facility, as required by applicable codes and regulations. Fire hose and reels will be provided within the transfer station tipping floor and at the lower trailer loadout area.

## **9.8 Electrical**

The service entrance panel boards and electrical equipment will be located in the electrical room. Power will be distributed within the building for shop equipment, lighting loads and other needs (break room appliances, receptacles, etc.). Maintenance shop lighting will be provided by metal halide high bay fixtures and luminaires or LED fixtures. Fast re-strike fixtures will also be provided to maintain appropriate lighting levels for employee safety after a power interruption, as well as through battery-powered safety lighting.

Lighting level in the Maintenance Shop will be a maintained level of 30 lux. The Operations Center area will have lighting levels of 80 lux.

Power will also be provided for site lighting and vehicle engine block heaters from this electrical room. Night-time operations areas will be provided with 80 lux; whereas, security lighting will provide maintained lighting levels of 30 lux.

### **9.9 Safety Equipment**

Safety equipment, including signage, hand-held type ABC fire extinguishers, eye wash/showers, and first aid cabinets will be provided, in addition to other GFL required safety equipment, as required by applicable codes and regulations.

### **9.10 Loading Dock**

A loading dock will not be constructed with the initial build-out.

## **10 PROPOSED SITE OPERATIONS**

### **10.1 Hours of Operation**

The hours of operation will be:

- Transfer Station - 5 am to 5 pm.
- Operations Center – 8 am to 5 pm
- Collection Vehicles – 3 am to 5 pm.

### **10.2 Waste Types**

The wastes to be handled at the facility will include up to 750 tonnes per day of:

- Industrial.
- Commercial.
- Institutional.

Future operations could include the handling of:

- Food waste.
- Metals and white goods.
- Clean wood waste.

### **10.3 Personnel**

The following personnel will be located at the site:

- Operations Center and Maintenance– 40 personnel.
- Collection Vehicle and Service Truck Drivers – 75 personnel.
- Transfer Station – 3 personnel.
- Transfer Tractor Trailer Drivers – 5 personnel.

## **10.4 Equipment**

The collection operation includes:

- 75 vehicles for the collection of waste materials and recyclables.
- 1 road service truck.
- 1 container transport truck.

The over-the-road transfer operation includes:

- 10 transfer trailers.
- 6 truck tractors.

The following equipment will likely be used at the Transfer Station:

- (2) Stationary Transfer Compactors.
- Yard Jockey.
- Wheel Loader.
- Skid Steer Loader/Integrated Tool Carrier (sweeper/broom, bucket, forks).
- Mechanical Broom/Street Sweeper with integral dust control.

In addition, approximately 1 acre will be required for exterior container storage.

## **11 PROJECT PHASING**

Phasing of the construction is not required as there are no on-going operations at the site.

## **12 PROJECT SCHEDULE**

The overall project schedule has not been developed at this time.