

Steel can improve your Waste Line

A population on its way to 1-million makes Edmonton, Alberta, Canada's 5th largest municipality. It also makes for a lot of waste. Facing reduced landfill and already diverting 60% of its waste, the city wanted to process the remaining 75,000 tonnes per year of composting residuals and 5,000 tonnes of materials recovery residuals. Their ultimate goal? Divert 90% from landfill and do it without employing a conventional combustion system.

The answer – an Integrated Processing & Transfer Facility (IPTF) that would separate waste into composting, landfill and biofuels production streams. The IPTF would provide the feedstock for biofuels in a partnership with Enerkem Alberta Biofuels, a subsidiary of Enerkem Inc. of Montreal.

The contract for IPTF construction was awarded on a design-build basis to Clark Builders of Edmonton who joint ventured with HIP Architects (now Kasian) of Edmonton, who in-turn joint ventured with Stantec Inc. of Edmonton as architectural sub-consultant. Construction began in January 2008 with substantial completion March 2010 and facility operations beginning a few months later.

The IPTF is located on the city's 550-acre (223 hectares) Waste Management Centre site that contains numerous facilities, including 12 waste processing, two major research, and sewage biosolids storage/recycling lagoons.

In initiating the project Edmonton issued an RFP establishing the parameters the successful bidders would work to. They included a tipping floor to determine waste streams, a sorting facility to separate materials and send to receiving areas, and a preparation area to shred and dry plastics and styrofoams before being transported to Enerkem's adjacent gasification plant to produce ethanol.

Accommodating these activities would require a very large building in terms of overall area, height and clear spans. Behlen Industries LP provided a clear-span rigid frame building with multiple-span lean-tos. The facility's footprint is 18,116m² (195,000 sq. ft.), with eave heights of 12m+ (40'+) over differing floor elevations.



The large recycling facility for the City of Edmonton is a key part in their overall master plan to reduce waste. The project was delivered by the design build approach. The ultimate goal? Divert 90% from landfill and do it without employing a conventional combustion system.





The building's steel standing seam roof is clad with 19,417m² (209,000 sq. ft.) of unpainted 61mm (.0239") AZM165 Galvalume Plus, with an acrylic coating.

Clark's Pete Simpson, Sr. Project Manager at the time, tells us, "One of the many awards we've won was Behlen President's Award for 'Overall Most Successful Dealer/ Installer.' Our steel building packages offer the combined logistical advantages of single sourcing, precisely engineered components, plus steel's inherent advantages of strength: weight and life expectancy – especially roofing – with low maintenance compared to competing materials. This project is a perfect example of a steel building fitting the bill.

In this case the building's standing seam roof was clad with 19,417m² (209,000 sq. ft.) unpainted 61mm (.0239") AZM165 Galvalume™ Plus, with an acrylic coating and exterior walls clad



with 4738m² (51,000 sq. ft.) of 45mm (.0179") Galvalume AZM150 coloured White/White QC18317 and 1,672m² (18,000 sq. ft.) of 45mm (.0179") coloured Slate Blue QC18260, in the Widespan profile and 3,902m² (42,000 sq. ft.) interior liner panels. Light steel framing (LSF) such as purlins and wall girts totaled 26,091m (85,600 ft.).

Edmonton is generally recognized as one of the world's most sustainable cities. Not surprisingly its Waste Management Centre comprises North America's largest collection of modern, sustainable waste processing and research facilities. A preengineered steel building is making a significant contribution.



Prepainted AZM150 Galvalume coloured White White QC18317 and Slate Blue QC18260.



DESIGN AND CONSTRUCTION TEAM:

- OWNER: City of Edmonton
- ARCHITECT: HIP Architects (now Kasian)
- STRUCTURAL: Stantec
- STEEL BUILDING SYSTEM SUPPLIER: Behlen Industries LP
- PROJECT MANAGER – STEEL BUILDING AND INSTALL: Clark Builders Metal Building Services
- STEEL WALL & ROOF CLADDING SUPPLIER: Behlen Industries LP
- STRUCTURAL STEEL & STEEL DECK SUPPLIER: Behlen Industries LP

- BUILDING: Rigid Frame: 3-plate built-up – multiple size webs and flanges
- BUILDING ROOF: Steel Standing Seam
61mm (.0239") unpainted Galvalume AZM165 Plus c/w acrylic coating
- WALL CLADDING: 45mm (.0179") Galvalume AZM150 coloured White White QC18317 and Slate Blue QC18260 in the Widespan profile.
- LIGHT STEEL FRAMING (LSF): Galvalume AZM150 in varying thicknesses from 1.52mm (.060") up to 3.68mm (.1345")