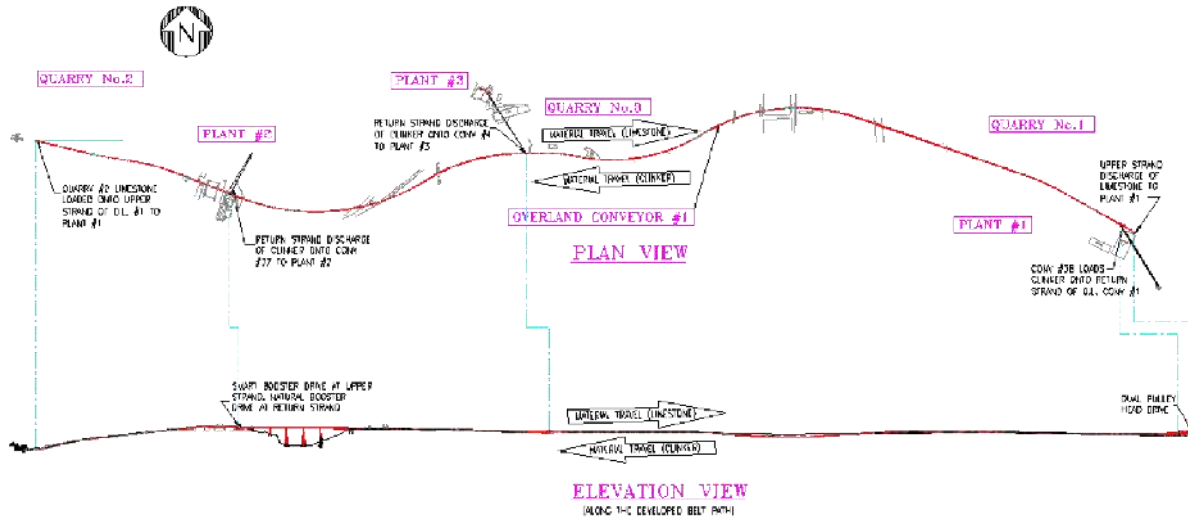


DSI OVERLAND CONVEYORS

EXCONTEC AT ESSROC



OVERLAND CONVEYOR FOR CONTINENTAL CONVEYOR LTD, AT EASTERN USA CEMENT COMPANY

The 2.8 kilometer overland conveyor for an Eastern USA Cement Company, depicted above, is the world's most advanced single flight conveyor system by virtue of the number of technologies featured, including:

- ✓ Two-way conveying, carrying crushed limestone, on the upper belt strand and clinker on the return belt strand.
- ✓ Horizontally and vertically curving path featuring 9 horizontal curves, each with compound vertical curves.
- ✓ Belt turnovers, to utilize the thicker belt cover at the carrying side in either travel direction.
- ✓ Complete speed control with AC motors by variable frequency drives.
- ✓ Tripper type "Smart" booster (intermediate) drive at the upper belt strand.
- ✓ Tripper type "Natural" booster drive at the return strand.
- ✓ Multiple discharge points along the return strand.

The data table below lists the features and parameter of the overland conveyor.

PROJECT DESCRIPTION

The customer needed to transport the limestone product of Quarry #2 to cement plant #1 and to distribute the clinker from plant #1 to cement plants #2 and #3. Significant savings could be realized by accomplishing these functions with a single, two-way conveyor but this required unprecedented combination of the latest technologies. Locations of plants #2 and #3 along with topographical and right of way considerations dictated an irregular path including 9, relatively tight horizontal curves, which are compounded by continuously changing vertical curves.

CONTINENTAL CONVEYOR LTD, LEADER IN THE HORIZONTALLY CURVING CONVEYOR TECHNOLOGY

The challenge was entrusted to Continental Conveyor of Napanee, Ontario and Thetford Mines, Quebec, Canada. Continental Conveyor Ltd has demonstrated its leadership in the horizontally curving conveyor technology with many installations throughout North America. Their dedicated, deep trough configuration and unique idler



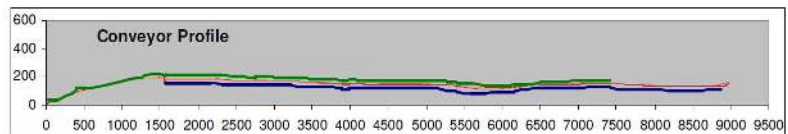
mounting system ensures reliable belt alignment, allowing fine adjustment of the super elevation angles including easy field adjustments during start-up and run-in.

This conveyor presented additional special challenges in tension control, because of the tight horizontal curves and the numerous possible transient load conditions. Drive distribution along the beltline, by tripper type booster drives facilitates good tension control. The “Smart” booster at the carrying side will limit its out-put, only when required, to preclude a local low tension condition.

DSI EXCONTEC

Subsequent to final design, Continental Conveyor Ltd chose Dos Santos International to perform a detailed comparative analysis using the **Expanded Conveyor Technology - ExConTec** computer simulation and analysis program. The **ExConTec** program is extremely versatile, with no intrinsic limitation on material carrying path or preference for location of drive, braking or tensioning (take-up) stations. “Load” and “Unload” (macro) buttons permit real time analysis of real loading conditions including loading on, trailing off of either or both carrying strands and any load discontinuities that will most aggravate the belt tension distribution. **ExConTec** also features expanded equations to account for the increased belt line resistance of induced curvature. The **ExConTec** discretionary factors permit calibration of the analysis model to reflect the experience and philosophy of the experts at Continental Conveyor Ltd.

Two-Way Overland Conveyor		
	Upper Belt Strand	Lower Belt Strand
Material	Limestone	Clinker
Design Rate	1320 t/h (1455 STPH)	420 t/h (463 STPH)
Belt Width	1067 mm (42")	
Belt Speed	3.35 m/s (660 FPM)	
Lift Net	46.8 m (153.7')	14.7 m (48.1')
Length Overall	2752 m (9029')	
Load Path	2748 m (9014')	2225 (7299')
Horizontal Curves Quantity	9	9
Intermediate Discharges	2	
Drive Power Distribution:	Smart Booster 298 kW (400 HP) Head Dual Pull 448 kW (600 HP) Total Upper 746 kW (1000 HP)	Natural Booster 149 kW (200 HP) Total Lower 149 kW (200 HP)



Real time analysis quickly reveals the tension and power distribution due to various material flow conditions at overland conveyor.

