



# ON THE ROAD

*A Supply Chain Travelogue*

*by Joseph O'Reilly*

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## Off The Beaten Path

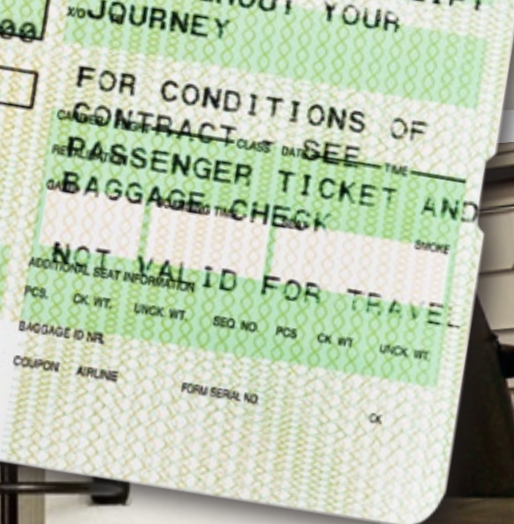
*Cluttering pages with supply chain strategies, logistics lexicon, elusive acronyms, and, periodically, run-on sentences, is habit forming. But it comes with my job.*

So does reverie.

In between pulling and parsing source information, then writing, the mind wanders. There's no shortage of distractions. Press releases, phone conversations, e-mails, RSS feeds, and Google have a way of triggering a not-so-recessive Kerouac gene, transporting me to people and places worlds and times apart. I often find myself compelled by an urge to drop down from the "editsphere" and engage the supply chain on the ground, in person.

*On the Road: A Supply Chain Travelogue* embraces this impulse.

Beginning in February 2009, I took to the road in search of new perspectives. My purpose was manifold: to see firsthand the inner workings of the U.S. supply chain; to visit with transportation and logistics professionals on their terms; to gain a better appreciation for the labor and love that make things and make things move; and finally, to share a "thick description" of my journey and take you along for the ride.



*With Sam Bellavance (right) in Nashua, N.H.*

I was equally motivated by previous experiences.

I recall driving eastward along the Trans-Canada Highway, from Prince Rupert, British Columbia, captivated by double-stacked Canadian National container trains flowing alongside the Skeena River. I still marvel at the remoteness of this intermodal corridor hemmed in by forever-green mountains.

I relish memories of bracing myself deck-side on a pilot boat in Norfolk, Va., imagining what it might be like steering Post Panamax containerships to port; of a tour guide's up-close introduction to the AlpTransit Gotthard Tunnel in Switzerland; of speaking with a Mark Twain-mustachioed UPS Air Cargo pilot on the flight deck of a freighter preparing for takeoff at Ted Stevens Anchorage International Airport in Alaska.

I also remember Martin McVicar, president of Combilift Ltd., showing me around his forklift manufacturing facility in Co. Monaghan, Ireland; then inviting me to test-drive a narrow-aisle lift truck—which I did—pallet and white-knuckle nerve in tow.

You may find clues to these sometimes-seen phenomena underneath a paper-strewn pile, hidden in a spam-filtered in-box, dripping from marketing collateral, or simply through word-of-mouth. But you can only really appreciate what you see in the flesh. Welcome to the *2010 Logistics Planner*.

### Seeing the Supply Chain for What it's Worth

The supply chain is constantly shifting in countless directions, absorbing layers of complexity as globalization stretches commerce and technology squeezes information. When you tear it apart, take away the artifice, what do you discover?

I found myself driving down dusty roads, side-stepping lift trucks, negotiating aisles and rush-hour traffic, slipping into steel-toed boots and out of hair

nets. There were slag piles and Purell dispensers, automated retrieval systems and remotely controlled locomotives, plastic pellets, wooden pallets, and a composite of personalities. Up close, the supply chain dissipates. It distills into unique people, places, and perspectives.

You begin to understand this when you drive hundreds of miles through remote desert to Belen, N.M., and the site of a Burlington Northern Santa Fe inspection yard. It becomes apparent as you slalom through traffic in a New York City taxi, bound for Port Elizabeth, N.J., the birthplace of containerization; or fly over North Carolina's heavily wooded Piedmont Triad, where plans for an Aerotropolis have captured the imagination of local businesses.

Sometimes the people are just as memorable as the place. In Nashua, N.H., Bellavance Beverage Company, a fourth-generation, family-owned wholesaler, serves up Anheuser-Busch InBev's global brands to local customers; and in Morris, Ill., A&R Logistics is molding the future for plastics manufacturers—through the visionary leadership of CEO James Bedeker and his operations staff.

When I began this odyssey nearly one year ago, the economy was in code red—which is even more telling. To no small degree, this article confronts recessionary fear. Rather, in small degrees, these stories give a face to people and companies that are working in over-drive to give our economy the green light.

In my mind's eye, all these experiences, past and recent past, stand apart. They should. Each of these stories exposes the day-to-day motions that make containerships shake, DC racks rattle, and truckloads roll. But they are also part of a much larger narrative that tops off this issue, then spills into *Inbound Logistics* every month of the year.

Welcome to my world. More importantly, thank you for inviting me into yours. Please join me as I hit the road.





# The Land of Enchantment and 10,000-foot Trains

## DESTINATION:

*Belen, New Mexico*

## LOCATION:

*Central New Mexico... 32 miles south of Albuquerque along I-25*

## POPULATION:

*6,901*

## DISTANCE FROM INBOUND LOGISTICS HQ:

*2,033 miles*

*You don't come upon Belen, New Mexico by chance.*

It takes purpose. For me, that purpose happened by chance.

I had randomly finished reading three books about New Mexico's rich history: Hampton Side's *Blood and Thunder*, an account of frontiersman Kit Carson's life and U.S. Manifest Destiny; *Billy the Kid*, a biography of the famous outlaw by Michael Wallis; and Tony Horowitz's *A Voyage Long and Strange*, a travel narrative that touches on Spanish exploration of the Southwest. Apparently, the impulse to explore New Mexico was my own manifest destiny.

I was also planning a circuitous ski trip, visiting a friend in Tucson, Ariz., before greeting the slopes in Steamboat Springs, Colo. Then an idea sprang. I contacted Jim Rogers, manager of media relations for BNSF Railway, to see if I could set up a visit at a facility in its Southwest division. I was expecting Phoenix or Albuquerque.

Belen was a revelation.

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## Belen, New Mexico

### *The Land of Enchantment and 10,000-foot Trains*

Driving across New Mexico's sweeping semiarid plains, the crisp February air and the barrenness of the terrain ostensibly freeze and expose every minute detail you can imagine: Chihuahuan desert and red-rock mesas; prickly pears, yucca, and agave; the sweet, pungent smell of sagebrush; AM and FM static; a not-so-wily coyote along the roadside; and his luckier adversary skirting across Highway 26 with an audible "beep, beep."

Very quickly, you come to expect and appreciate the sublime in the *Land of Enchantment*.

adults. That's the truth.

There is yet another narrative that twists its way in and out of the canyons that build as you drive north toward Albuquerque. Periodically, glimpses of single and double-stacked intermodal containers, sandwiched between locomotives, on seemingly endless trains, flash in and out of view. Follow these flickering tracks long enough and you pass through Belen, a sleepy railroad community nestled in the valley of the Rio Grande River and in the shadow of the copper-colored Manzano Mountains.

### *Crossing The Border...in New Mexico*

The flashing "Merge Right" signs are luminous against the dusky maroon backdrop of pancake-stacked mesas. Up to this point, traffic on I-25 has been light. Now, stuck between tractor-trailers, I'm following a slow procession away from the interstate into a roadside weigh station, thoroughly confused.

As I approach, I see a pack of uniformed officers lingering near the main building, their shadows lengthened by far too many floodlights. It's a U.S. Customs and Border Patrol checkpoint.

My bemusement quickly turns to amusement as I calculate the odds of finding a checkpoint in the middle of the Chihuahuan desert, 200 miles north of the Mexico border. I have nothing to fear, of course. But then there is a lingering doubt, an uneasy feeling, the kind you have as you pass through airport security.

I roll down the window and flash my driver's license. The Customs officer seems satisfied, asks me a few questions, then peers into the back of my Arizona-plated rental.

"What's in the bag?" he asks.

"Skis," I reply.

He squints again, shakes his head (*now who's confused*, I think). "Where are you going skiing?"

"Colorado territory," I counter, good-naturedly. And with an unexpected smile and wave of the hand I'm back on the road to Belen.

Moving north along I-25 into the heart of New Mexico, highway signage offers another reality. Subtle and austere clues to the state's vibrant and sometimes volatile history, and its part in President James K. Polk's vision of Manifest Destiny, materialize. The Santa Fe Trail, Fort Union, Fort Sumner, the Laguna, Acoma, and Isleta Indian reservations all share a puddled and muddled tale. Place names such as Silver City and Truth or Consequences tell a story of pioneer adventure, past and present—the former an old mining town and popular haunt of Billy the Kid, the latter a modern-day spa retreat for pampered

#### **Finding a New Star**

The original settlement, christened Belén (Spanish for Bethlehem), resembles little of its namesake—cheap accommodations are plentiful. A quick exit off I-25 takes you through a commercial strip splashed with neon lights and signs for budget motels and fast food.

The bedroom community of nearly 7,000, 32 miles south of Albuquerque, is commonly referred to as "Hub City," commemorating the Atchison, Topeka, and Santa Fe Railroad, which first laid tracks through



*Looking east toward Manzano Mtns*

the area in the late 1800s.

In 1908, the Belen Cutoff was created as a bypass between Texico (on the Texas-New Mexico border) and Dalies, southwest of Albuquerque, instead of a more northerly passage. The new route from Chicago to Belen shortened the distance by only six miles, but it reduced the average grade from 158 feet per mile through Raton Pass (on the New Mexico-Colorado border) to 66 feet per mile. At the time it was a considerable engineering feat, improving operational consistency, velocity, and throughput.

Today, Belen and the railroad remain inseparable. The city is home to BNSF's largest inspection yard on the southern transcontinental corridor (Southern Transcon), linking Southern California and Chicago. Heading north on Main Street, take any right-hand turn and you'll find track. Equally telling, the railroad is the second-largest private sector employer in town after Walmart.

The BNSF facility, which extends about 14,000 feet end to end, is positioned geographically north to south, with the main lines connecting to the yard from the east and west—like a diagonally challenged,

backward "Z". It runs parallel to Main Street seven blocks adrift, and lies between the town and the Rio Grande. Four tracks in each direction converge into one lead at both of the yard's ends. With up to 90 trains a day moving both east and west through the system, it's little wonder Belen has the largest signal mast in BNSF's Southwest Division.

"We are the NASCAR pit stop for trains," says Bob Gomes, general director of transportation at the Belen rail yard.

Gomes, whose passion for the tracks is only matched by his love of the links, has worked in various positions at BNSF Railway over the years.

"I started out as pre-med in college and worked for the railroad during the summer," he recalls. Burned out by plans for a career in the medical profession, he started working full-time as a train yard operator. "They had just stopped using Morse code for communication," Gomes says with a glint in his eye. He's not lying.

Nearly four decades removed, Morse code is an anachronism, but not Gomes. He has moved around





## Belen, New Mexico

### *The Land of Enchantment and 10,000-foot Trains*



*Fuel for thought...140,000 gallons a day*

with BNSF, working in Amarillo, Los Angeles, and now Belen, but his love for the railroad has endured for one simple reason.

"Working with people is the most enjoyable part of my job, they are the ones doing the business. People make the railroad run," he says.

#### **Train Spotting**

In the yard, in the flesh, steel dominates the view. Rail cars abound in varying sizes, colors, and types. Single-unit commodity trains share tracks with mixed merchandise trains. A BNSF reefer car covered in graffiti, a flatbed loaded with Sierra Pacific paper products, double-stacked Hub Group containers in articulated well cars, boxcars, centerbeam flat cars, tankers, hoppers, gondolas, and countless other rolling stock species complete the panorama.

Bringing some order to the yard, two pumpkin-orange BNSF locomotives, a 1,000-horsepower switcher locomotive (#3601) and another 3,000-horsepower workhorse (#6705), wait in

anticipation, ready to begin assembling a new train.

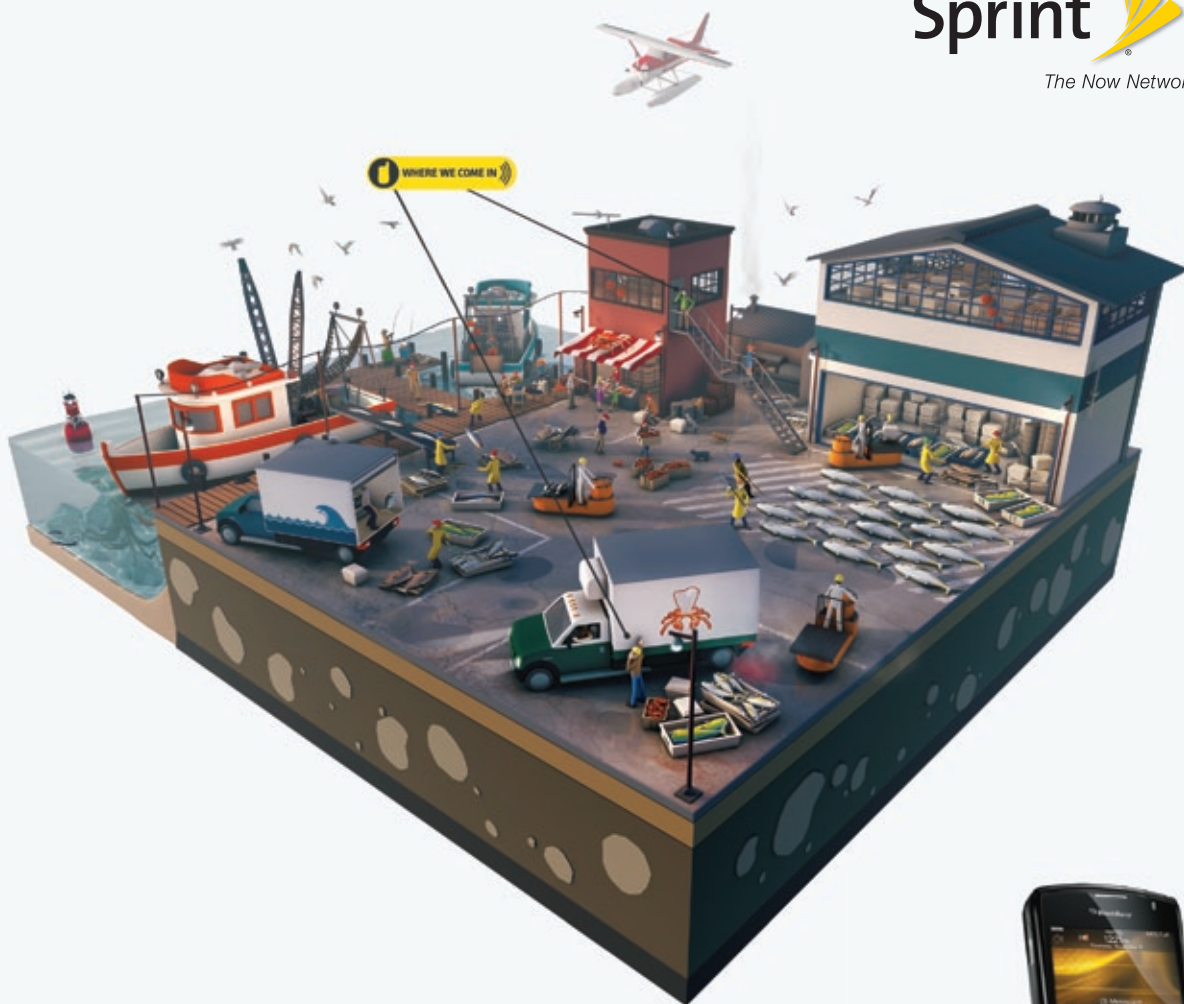
The Belen facility, like others in the BNSF system, primarily serves as a maintenance and fueling oasis along the transcontinental journey. Trains are inspected every 1,000 miles. Workers refuel locomotives and service equipment, and the railroad uses these stops to switch crews.

The yard features a four-tank fuel farm, each reservoir holding 2.7 million gallons of fuel. At both ends of the facility, brightly colored orange and blue fuel pumps sit track-side, dwarfed by towering white tanks emblazoned with the BNSF logo. It takes approximately 17 minutes to refuel a locomotive, and on any given day the yard will consume 140,000 gallons of fuel.

Off track, a ShuttleLift gantry crane lies ready to spring into action. If there is a time-sensitive shipment coming inbound to Belen and a locomotive brake fails, for example, BNSF can pull a container off the train and transfer the cargo to its Albuquerque intermodal facility for transshipment.

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## Belen, New Mexico

# *The Land of Enchantment and 10,000-foot Trains*

### Block and Switch

The linear conformity of the yard's railroad tracks stands in stark contrast to the hodgepodge of equipment littering the area. But this visual anomaly reflects another important function of the Belen facility—mixing and matching trains.

BNSF uses the yard to block swap rail cars, essentially building trains and consolidating loads for final destination—akin to a warehouse crossdock. So a train moving from Barstow, Calif., eastward will stop in Belen for inspection and to shuffle cars and purify loads, says Gomes.

“Generally, there is not enough origin traffic to run end-to-end across the Transcon. So a facility such as Belen is important for consolidating loads and gaining efficiencies and economies of scale,” he adds.

Building uniform trains is also critical to improving velocity and capacity throughout the network. Manifest trains, with mixed car types and cargo, are generally rebuilt into single units, with like commodities bound for one location.

“Trains need to be fully loaded with no gaps to run at maximum high-speed. It requires train car consistency. You can't have manifest trains with mixed cars,” says Gomes.

The speed with which trains run across the sparsely populated and mostly flat Southwest is remarkable. Reaching 70 miles per hour in the flats, “it's the fastest freight railroad in the world,” Gomes notes with pride.

This velocity also lends further credibility to the railroad's belief that intermodal business between West Coast ports and the U.S. interior will continue to grow. With 60 percent of U.S. consumed goods coming through the L.A. basin, New Mexico in general, and Belen specifically, are strategically located for rail volumes moving both east-west and north-south across the Mexican border.

### A Modern Marvel

Currently, the majority of freight transiting Belen is carried on intermodal container stack trains. As inbound and outbound volumes warrant, BNSF can run trains on any number of the eight tracks in the yard to flex capacity.

Over the course of a week, traffic is well-balanced from the west and east. “During peak periods in 2006 and 2007, we averaged 92 trains per day through Belen. In 2009, to date, we average 68 trains per day, which is attributed to the weak economy,” says Gomes.

A train that leaves Hobart, Calif., at 7 a.m. arrives in Belen at 5 a.m. the next day—22 hours all told. It takes two and a half days to go from Los Angeles to Chicago.

In 2007, BNSF began experimenting with an intermodal 10,000-foot train between Southern California, Clovis, N.M., and Chicago. Since then,

## *A Matter of Perspective*

As I make my way around the rail yard, Bob Gomes' words linger: “People make the railroad run.” At first glance, though, that sentiment doesn't whistle true. In the yard, people are mostly unseen. Unmanned switching locomotives move remotely. Periodically, I see two-man inspection crews buzz by on all-terrain vehicles (ATVs), scrutinizing equipment for mechanical and physical performance.

It's an odd sight to me. ATVs in a rail yard? Who knew?

I quickly learn the rail yard's entire switching operation runs on remote control. A BNSF utility engineer on each shift can coordinate efforts to dog-catch a train or manage special switching needs.

My nostalgia for sepia-toned photographs of men laboring on the railroad is dented. And well it should be. In the 21st century, the U.S. railroad is a colorful, dynamic, and automated freight-hauling machine. People still make it work—they just do it much more efficiently.

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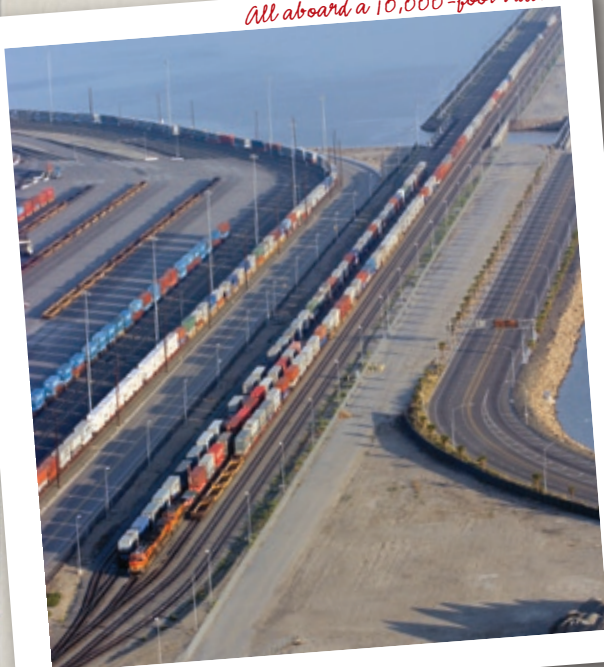
## Belen, New Mexico

### *The Land of Enchantment and 10,000-foot Trains*

the railroad has operated more than 800 extended length trains to gain further economies of scale and accommodate more intermodal customers' freight. The longer units now typically run from Southern California or San Bernardino to Chicago—with inspections in Belen, Kansas City, or Fort Madison, Iowa. The savings accrued by running these trains creates capacity for other intermodal and non-intermodal trains throughout BNSF's network.

"The 10,000-foot units take 2.5 trains out of the mix per week," says Gomes, "which saves \$30,000 a week in crew labor."

*All aboard a 10,000-foot train*



Building and maintaining longer trains requires a great deal of planning and execution. A large chunk of track is necessary to stage and load equipment. To simplify the process, BNSF breaks the train into smaller sections on different tracks, loads each unit, then stages the complete train for movement.

When these mega trains began running through Belen, workers were inspecting cars and refueling

locomotives at a 12,000-foot rail siding 10 miles east of town to allow for more space. But it became too costly in terms of time (six hours for inspections) and the expense of transporting workers offsite. BNSF now serves the trains inside the Belen yard.

With successful rollout of its 10,000-foot train configurations, BNSF is looking to squeeze even greater efficiencies through changes in power configuration—for example using distributed power, intermediately placed locomotives (three locomotives in the front, two in the middle, and two at the rear) remotely controlled by the lead engine. The railroad is also exploring other origin locations to run trains from.

Not one to rest on its locomotives, BNSF is engineering even longer trains. On July 10, 2009, BNSF tested its first 12,000-foot train, nearly 2.3 miles in length, from Southern California to Clovis. The record-busting haul carried 458 units and 11,256 tons more than 1,100 route miles.

#### **Full Steam Ahead**

Building monster trains is one thing. Making sure they can transit New Mexico's devilish canyons is another.

BNSF is currently working on several projects throughout the Southern Transcon, and in New Mexico specifically, to double- and triple-track lines. In 2008, the railroad announced a \$2.45-billion capital commitment program that includes network upgrades to capacity-choking bottlenecks such as Abo Canyon, which lies due southeast from Belen. The existing route snakes around 500-foot-high bluffs, through cuts 150 feet deep, and over 70 foot-high bridges. BNSF is in the process of constructing a second mainline through this canyon to ease congestion and increase throughput.

Supplementary tracks on either side of the pass stage trains for passage through the canyon. Gomes likens it to a flagman directing one-way road construction traffic. "Moving through tight canyons, there is often only a single track for bi-directional traffic. It's a problem right now, but double track will fix that," he says.

Greater track redundancy and the continuing

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## Belen, New Mexico

### *The Land of Enchantment and 10,000-foot Trains*

manifestation of longer trains place Belen in the middle of a ballooning transportation artery and on the precipice of an economic development boom. The challenge for railroads, and economic development interests as well, is keeping investment out of urban areas but in proximity to major markets. Albuquerque is the largest and fastest-growing city in New Mexico; it's also geographically isolated from any megapolitan area. So, the city has become an important intermodal feeder and terminus for BNSF's Transcon.

But Albuquerque can't grow north or east because of the Indian reservations, says Gomes. It can grow south, and Belen has become increasingly attractive. "The price of dirt is going way up," he notes.

#### Blazing New Trails

Motoring north from Belen along I-25 past Albuquerque, you leave the Rio Grande behind and enter into the foothills of the Rocky Mountains. Outside Santa Fe, climbing through Ponderosa,

Juniper, and Piñon forested mountains, leads to Glorieta Pass—site of a famous Civil War battle that checked Confederate incursion farther west. Then, skirting the Sangre de Cristo Mountains, you approach the Colorado border and Raton Pass, the same route of the Santa Fe Trail—the original interstate system—and the Atchison, Topeka, and Santa Fe Railroad's first transcontinental line.

Dropping down from the pass into the Purgatoire River Valley across the state line, vistas open up to the eastern plains. BNSF track reappears, meandering east and west of I-25 along Colorado's Front Range and well beyond.

Take out a map or follow your GPS north, west, east, or south and you will inevitably cross tracks again with BNSF and countless other railroads.

Along the way, you'll find more Belens. They may be few and far between the megalopoli stretching across the contiguous United States, but their importance in the domestic transportation mix is front and center, and growing. ■

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*In small ways I discovered that what passes day-to-day in Belen—* routine inspections, crew changes, block swapping cars, and 10,000-foot trains—spins gears in Albuquerque, between California and Chicago, across the United States, North America, and supply chains the world over.

I write a lot about the railroad. Intermodalism is a hot topic these days, what with sustainability, capacity, and economy sweeping the consciousness of shippers and service providers alike.

My visit with BNSF confirmed an impression that has been building for some time—some might argue decades. History is repeating itself. The archaic railroad is back in vogue. Turn of the 20th century transportation is on a turntable ready to lock into 21st-century demand.

Sleepy railroad communities are stirring. Crossroads are sprouting, growing, and branching off, connecting to an array of towns and yards, coastal and inland ports, terminals, intermodal facilities, hub cities, and rail-served manufacturing and distribution centers.

Like any healthy, well-rooted organism, the railroad and its network of partners and infrastructure help nourish each other—attracting, hosting, and feeding more transportation and manufacturing development, industry and people, innovation and expansion.

It's happening in places like Belen.

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## On the Waterfront

### DESTINATION:

Port Elizabeth,  
New Jersey

### LOCATION:

Northern New  
Jersey, adjacent  
to Newark Bay,  
The New Jersey  
Turnpike, and  
Newark Liberty  
International  
Airport.

### POPULATION:

125,809

### DISTANCE FROM INBOUND LOGISTICS HQ:

16 mi.

*Commuting from New Jersey  
into New York City off and on  
for 20 years, few things have  
escaped my writer's eye.*

Except the most obvious – one of the largest port complexes in the United States and the birthplace of containerization.

Even after spending thousands of hours sitting in rush-hour traffic, staring blankly out of a commuter bus window at planes, trains, and automobiles crisscrossing New Jersey wetlands, proper introductions went wanting.

When an opportunity presented itself in April 2009 to join the Council of Supply Chain Management Professionals' New Jersey Roundtable for a presentation and tour of Port Elizabeth's APM and Maher terminals, our paths finally crossed.





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## Port Elizabeth, New Jersey

### *On the Waterfront*



*ExpressRail, "the jewel of the port"*

In the core of the Big Apple, there's no lack of stimuli. Glass window displays compete for attention with walls of steel. Wall Street's granite facade melts into Broadway's lights. Big ideas receive even bigger media exposure. But the rhythm and flow of the city is dependent on a much larger, albeit less ostentatious, force.

Mere miles from the glitz and the glam, across the Hudson River in New Jersey swampland, sits a gritty big-box port that brings quality and quantity to life in a New York City minute.

The Port Authority of New York and New Jersey (PANYNJ) is a bi-state agency that operates and maintains infrastructure and services – including mass transit, six tunnels and bridges, five airports, and the third-largest marine cargo port in the United States – within the greater metropolitan area.

Port Elizabeth, located in New Jersey, features the port's two largest tenants. APM Terminal's operation is its largest on the East Coast, boasting 350 acres, on-dock rail access, and three deepwater berths. Separated berth-side by a lone linked fence,

APM's counterpart is even more imposing. Maher Terminal's facility is the largest in North America in terms of acreage and volume. It's a port within a port. In terms of container throughput, Maher is larger than Norfolk, Montreal, Boston, Halifax, Baltimore, and Savannah, handling more than two million TEUs in 2008, or nearly 50 percent of all container volume moving through the port.

Both facilities play a big role in the port's current and future reckoning. Despite the economic downturn, the PANYNJ only experienced a one-percent dip in container business in 2008, recording 5.2 million TEUs. In comparison, West Coast ports such as Long Beach and Los Angeles saw volume drop by 40 and 32 percent, respectively.

Through September 2009, container traffic has been less robust, with a near 16-percent slide year over year. Still, the port is bullish about the future and the efforts its tenants are making to expand with anticipated demand.

Elizabeth, N.J., is in the middle of a fast-sweeping port boom.

### Approaching Terminal Velocity

The approach to Elizabeth from Manhattan offers a “baptism by ire” into New Jersey locomotion. Navigating around the state’s notoriously circuitous maze of highways and toll plazas is a test of patience, will, and U-turnability. The brave wing in with a trusty GPS and a heavy foot. Those more or less astute take their chances with an adrenaline-fueled New York City taxi ride that might scare even *Frogger*.

Exit 14 off the NJ Turnpike veers in two directions—one road leads to Newark Liberty International Airport, the other to Port Elizabeth. Like a labyrinthine DC conveyor belt to a lone loading dock, all roads lead to a Port Authority. Finding your way to the marine terminals after leaving the Turnpike is comparatively easy. Left and right, tractors towing 20- and 40-foot containers, others unburdened, scream along as they wend their way to and from Port Elizabeth’s docks.

Moving south along Corbin Street, the main thoroughfare into Port Elizabeth, you find yourself surrounded by intermodalism. The marine complex is to the left, the railroad is to the immediate right, then the NJ Turnpike, and beyond that Newark Airport. All around, planes, trains, and trucks make their presence felt, visibly and audibly. Less conspicuous, beyond glimpses of towering candy cane-striped cranes, the maritime drama unfolds.

### A Matter of Plumbing

Currently, the PANYNJ holds a 14-percent market share of containers moving in and out of the United States and expects this piece of the pie will grow. At their peak, Long Beach and Los Angeles controlled nearly 65 percent of all container trade in the country, but that number is sliding—precipitously so—as sourcing patterns shift.

PANYNJ is already the third-largest port in the United States, serving the country’s most populous region. But infrastructure development and expansion in a major metropolis is not without obstacles. “Infrastructure is a systems issue, it’s a matter of plumbing,” says Peter Zantal, general manager

### No TWIC, No Entry

Gaining access to the Port Authority of New York and New Jersey in the aftermath of September 11 is no small task. Visiting as part of a tour group makes it easier. But even then, I’m subject to scrutiny.

Approaching the entrance to the APM Terminal, electronic signage blinking “No TWIC, No Entry” captures my attention—and port security has a newly captive audience. The irony is dripping.

The much maligned and delayed rollout of the Transportation Security Administration’s Transportation Worker Identification Credential (TWIC) program seizes yet another victim. Even fully documented, tour-bus-trapped logisticians and writers are subject to proper security clearance—and a timely delay until our TWIC-carrying escort arrives on the scene.

strategic analysis and industry relations, The Port Authority of NY and NJ.

The port is rooting out inefficiencies to increase and enhance cargo flow. In terms of TEUs handled per acre per year, there is room for greater productivity. PANYNJ is currently at 2,500 TEUs, 500 less than Los Angeles. Hamburg is twice as efficient. One reason for this anomaly is the port’s reliance on trucking to move cargo in and out of the area. Only 14 percent of shipments are ferried via rail—and here lies great opportunity for improvement.

It’s why the port has invested \$600 million in rail/intermodal enhancements, most notably the Millennium Rail project. The joint venture between APM Terminals and Maher Terminals operates the ExpressRail System, which provides dedicated rail facilities for the port’s major container terminals and additional rail support track. Centered between both facilities, the system provides daily double-stack train service between the port and points in the Midwest, eastern Canada, and beyond.





## Port Elizabeth, New Jersey

### On the Waterfront

#### An Inside Peek During Peak

The Maher and APM terminals sit side by side along Corbin and McLester streets, with Elizabeth ExpressRail separating the two yards. Entering the APM gate, you pass 29 inbound and outbound truck lanes. Drivers and their tractors queue up to receive pickup instructions and lane assignments from gate clerks. Leaving the terminal, they pass through a 10-point roadability inspection process before transiting a series of iridescent yellow radiation portals.

Moving toward the docks, an out-of-service chassis graveyard passes view, followed by yellow reefer racks, where containers with perishable, temperature-sensitive goods are plugged in to stay cool.

On this day, three ships are in port: the *Maersk*

*Douglas*, *Maersk Kentucky*, and *Hanjin Wilmington*. The terminal is abuzz. Loaded and empty tractors scurry here and there, picking up and toting containers around the yard. "The place is busy today," observes Jamie Shelton, general manager of client services at APM Terminals. "That's good."

The APM yard features 6,000 feet of berthing space in the shape of an "L" on the southeast-facing side of the port abutting Newark Bay. It operates 15 ship-to-shore cranes—including four Super Post Panamax and eight Post Panamax—used for loading and unloading containers from vessels.

Passing underneath these rolling leviathans, and in the shadow of three container-laden ships, you begin to appreciate the size, scope, and scale of their shared endeavor.

The *Maersk Douglas*,

for example, which flies under the German flag, stretches 965 feet in length—or three football fields and two holding penalties—and 105 feet in width. It can carry in excess of 5,000 TEUs fully loaded. The Super Post Panamax cranes span 206 feet, or nearly 26 containers across.

As crane operators strip the *Maersk Douglas* of its enormous weight, the "hard hat only" signs seem blatantly obvious. The dock is a hive of activity, a constant whir and blur of tractors letting go of chassis, straddle carriers confronting containers, and cranes hoisting boxes. Bob-tailing hustlers, bomb carts, straddle carriers, tractors, and rolling gantries hurtle in and out of moving containers and neatly stacked hatch covers.

These types of containerships have an eight- to 12-hour dwell time on average, sometimes longer depending on the mix of imports and exports, explains Shelton. Historically there is a 70/30 percent break between incoming and outgoing cargo at the terminal.

Moving past dockside, where workers are re-stenciling and painting *Maersk Kentucky's* name, you see the Millennium Rail project up close and personal. Sandwiched between the APM and Maher terminals, the ExpressRail spans 45,000 feet, includes 18 tracks, and is served by four railroads—and two primary Class I's, CSX and Norfolk Southern.

Greater productivity partly predicates the port's future container volume growth, so rail/intermodal accessibility is a competitive differentiator. "If you make the port more efficient, make it easier to get

### Business As Usual... Sort of

It's difficult for me to see any obvious signs of a recession at the port. To an untrained eye, the Maher yard is abuzz with activity: ships are loading and unloading containers; straddle carriers, gantry cranes, and tractors are in full operation. But Ivo Oliveira of Maher Terminal points to signs of another reality. Densely stacked containers in one area of the yard are an ominous reminder of the current economic climate. They're empty—and a buildup of empty boxes can clog the terminal and impact efficiency.

Another clue is anchored berth side. The *MSC Caracas* is completely stripped of its cargo, which is uncommon. The vessel is loading empty containers to reposition elsewhere.

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## Port Elizabeth, New Jersey

### On the Waterfront



*Straddle carriers and gantry cranes, Maher Terminal*

in and out of, that makes it more competitive," says Zantal. "We did not expect rail traffic to ramp up so much so fast. Rapid growth has largely been attributed to high fuel costs, concentrated cargo, and more hinterland traffic."

#### Building for a Container Boom

Next door at the Maher terminal, lunch hour is passing and the pace of movement is picking up. The facility's administrative building lies on the west side of the terminal, near the entrance gate, surrounded by layers of fencing. The building stands alone. Its boxy, monolithic profile dwarfs the islands of containers scattered elsewhere around the 445-acre yard.

Maher's office is important for another reason. It's the original headquarters of Malcom McLean's SeaLand business—the company that gave containerization and the port a name. "Many global container terminals were conceived in this building," says Ivo Oliveira, vice president of Maher Terminal. "If walls could talk."

The main truck entrance features a five-lane canopy equipped with laser scanning technology and cameras that snap multiple images of equipment while intuitively weighing stock as it rolls through. During this process, the terminal is able to recognize

that a container has arrived and identify the ship and destination port where a specific box is bound. Instructions are placed in a queue and directions are conveyed to truck drivers and straddle carrier operators. All this happens in a matter of seconds, explains Oliveira. Eventually the terminal will move toward virtual, unmanned lanes. On an average day, Maher will process up to 7,000 trucks.

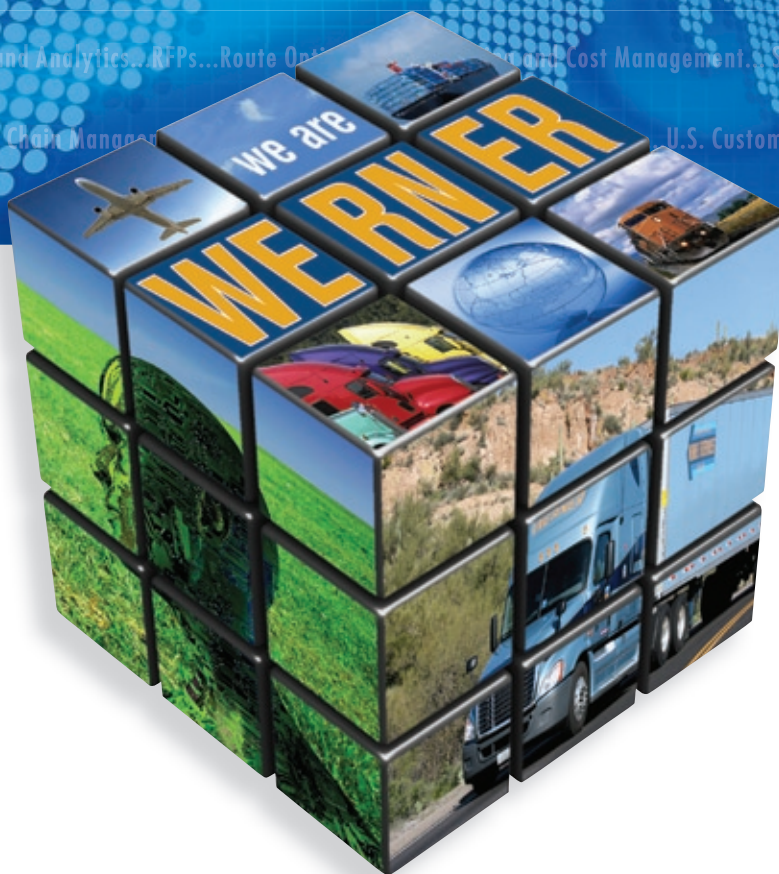
Along the 10,000-foot berth, which can accommodate nine container ships contiguously, the *MSC Dartford* and *MSC Scotland* are in various stages of unloading. Super Post Panamax and Post Panamax cranes sit on 100-foot gauged rail so that operators 130 feet up can maneuver the equipment. Maher Terminal operates 180 straddle carriers and 16 cranes, which are capable of handling the largest container-ships. "The booms extend forever," observes Oliveira.

Compared to the APM yard, where truck lanes converge into pyramidal cathedrals of stacked containers, Maher's yard is much less cluttered, more dispersed. Case in point, Maher Terminal has reefer container capacity for 1,000 boxes, which is quite large, but it uses a straddle grounded system as opposed to denser reefer racks. Apart from having greater acreage, Maher has made the transition from high-density stacking because it serves a heavy



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## Port Elizabeth, New Jersey

### On the Waterfront

truck market. The best way to service trucks is by using straddle carriers. It's a matter of direct transfer rather than concentrated and aggregated transfers, explains Oliveira.

But if the future is any indication, and as the port explores better means of improving velocity, the joint venture Elizabeth ExpressRail will grow more popular as a conveyance for moving containers on and off port. "We're trying to accommodate a coming cascade of larger ships into this side of North America. On-dock rail is the jewel of the facility. I cannot stress its importance enough," Oliveira adds.

#### Building a Bridge to the Future

As the economy rebounds, the West Coast port conundrum and concerns about capacity, congestion, and infrastructure will likely regain currency. U.S. container trade dominance is beginning to shift its equilibrium away from the west as Asia-

origin volumes wane, global sourcing paradigms shift, all-water services through the Panama and Suez canals strengthen, and U.S. Gulf Coast and East Coast ports ratchet up capital investments.

The PANYNJ and its tenant partners have made great strides investing in the future. But as you look across Newark Bay from the APM and Maher terminals, past container-laden Goliaths, and in the shadow of Gotham's steel spires, the port's greatest obstacle sits inconspicuously on the horizon—the Bayonne Bridge.

To the port, the bridge is anachronistic, a symbol of the past, of pre-containerization trade. But it

*APM Terminal, Newark Bay, and Bayonne Bridge*



*Going up or coming down?*

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## Port Elizabeth, New Jersey

### *On the Waterfront*

is still hugely relevant for modern-day transit. The span stretches across the Kill Van Kull and ferries more than 20,000 vehicles a day between Bayonne, N.J., and Staten Island, N.Y. Constructed in 1931, the Bayonne Bridge's 151-foot air-draft (the distance from the water's surface to the underside of the bridge roadway) is a major limbo stick for growing containerships.

"Maher Terminal is ready for the future," says Oliveira. "The problem will be getting boxes past the Bayonne Bridge."

That challenge will be exacerbated when the worldwide fleet of Super Panamax and New Panamax containerships comes online with the completion of the Canal's expansion.

In 2008, the Port Authority commissioned the

United States Army Corps of Engineers to complete an audit of the commercial consequences and benefits of fixing the Bayonne Bridge's air-draft restriction. It reported that modifying or replacing the bridge could cost \$3.1 billion and take 10 years or more to complete. Now, PANYNJ is spearheading a \$10-million study to determine a preferred course of action.

Ongoing analysis is evaluating a variety of solutions that would accommodate new vessels and container volumes. But the Port Authority and the Maher and APM terminals are at an impasse over the overpass as engineering and environmental due diligence take their course. For Oliveira, it's a matter of simple logic.

"As soon as the Bayonne Bridge comes down, or goes up, we'll be poised to handle these new ships." ■

---

*Traffic is as unpredictable as ever on my daily commute.*

The flashing landscape that passes by my window does little to shake the ennui. But glimpses of container cranes suspended over Newark Bay and a forsaken bridge welcome new knowledge.

Port Elizabeth is thoroughly New Jersey. It has an exit off the Turnpike, the accents are thicker, and you can't help but think The Boss would feel right at home on the docks.

It's also thoroughly *Inbound Logistics*. What happens every day at the APM and Maher terminals is the pulse to my monthly beat. Port Elizabeth is where demand and supply connect, where modes come together, and where the past and future of maritime trade are converging.

The port will always be cast in the light of Malcom McLean's SeaLand adventure and the birthplace of containerization. And yet, ironically, it is a looming shadow from that shared past – the Bayonne Bridge – that is boxing in future plans.

Port Elizabeth isn't alone. This tension exists elsewhere around the country where new transportation demands are raising old infrastructure problems. But the port and its tenants are moving the needle in another way.

Port officials are convinced the Millennium Rail project will do wonders for improving hinterland connectivity and container throughput. They believe it's one solution to managing growth. You also get the impression that terminal operators and government will confront the challenge of re-engineering the Bayonne Bridge with equal determination. That's thoroughly New Jersey, too.



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# Visions of an Aerotropolis

## DESTINATION:

Piedmont Triad,  
North Carolina

## LOCATION:

The region encompasses  
12 counties in north  
central N.C., including  
the cities of Greensboro,  
High Point, and  
Winston-Salem.

## POPULATION:

1.5 million

## DISTANCE FROM INBOUND LOGISTICS HQ:

561 miles

*In May, the Piedmont Triad Partnership invited me to join a press tour of the area.*

We visited several manufacturing and distribution facilities, and Old Dominion Freight Line's headquarters, but the Piedmont Triad International Airport (PTIA) was the focal point. From my initial arrival to our final stop at the new runway and FedEx Mid-Atlantic Air Hub, conversation generally orbited around plans for an Aerotropolis.

The word itself, and the vision it conveys, has an almost futuristic subtext – a “Jetsonian” utopia in my cartoon-cluttered mind. But as I learned, the concept is more grounded than that. Air freight and FedEx are the magnets that build attraction, but warehouses, trucks, and manufacturing are the bearings that will make this vision real.

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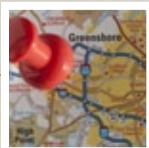


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## Piedmont Triad, North Carolina

### *Visions of an Aerotropolis*

#### Build it and They Will Come

North Carolina is popularly recognized in two ways: as the Tar Heel State and First in Flight.

Both labels bear proof of North Carolina's rich history as a center for manufacturing and transportation. Flying into Piedmont Triad International Airport, located in the North Central part of the state, these influences quickly emerge.

From above, a patchwork pattern of open spaces and heavily wooded tracts points to the state's well-rooted timber industry. You can almost imagine early pioneers clear-cutting old-growth forests, firing their kilns, extracting pine pitch, and tarring their heels in the process. Eventually a vertical was born, paving the way for pulp, paper, textile, furniture manufacturing, and a host of other industries.

If the marvel of flight and North Carolina's role in its ascent doesn't immediately grab your attention, passing license plates emblazoned with "First In Flight" will. Thanks to the Wright Brothers and a breezy testing ground in Kitty Hawk, forested enclaves soon heard the buzz of planes flying overhead.

Today, the buzz over Greensboro, Winston-Salem, and High Point is no less striking. The debut of the FedEx Mid-Atlantic Air Hub in June 2009 – a nearly one-million-square-foot sorting facility adjacent to the airport – and the projected completion of a 9,000-foot-long runway at PTIA have imaginations soaring. Local businesses, government, and economic development agencies

### *A Clean Sweep*

Liberty Hardware is proof-positive of the Piedmont allure. The cabinet hardware and decorative home furnishings supplier relocated to Winston-Salem in the 1980s to be closer to the region's established wood furniture industry. Two decades in, and despite outsourcing's grip on North Carolina furniture manufacturing, Liberty Hardware is thriving.

Walking around the company's 680,000-square-foot distribution facility, I am struck by its sterility. Its floors are immaculately clean. The sheen from the overhead lights is glaring. The only pollutant is the hum of fans and the whir of automated guided vehicles and conveyors flowing product about. The DC's sorting operation has the look and feel of a baggage claim carousel—except faster and without that nagging feeling of "maybe, maybe not."

Colors abound. Red stripes, green racks, and yellow columns liven up industrial grays. Yet, oddly, it is the blue shrink-wrapped pallets that capture my attention. Why blue?

Because it grabs attention, visually differentiates product, and reduces claims.

Liberty Hardware takes cleanliness, efficiency, and safety seriously. Housekeeping ranks right up there with on-time shipping, says Tom Turner, vice president of global logistics.

Looking up at the banners hanging from the rafters – "Don't Take Chances with Safety" and "100% Complete, Accurate, On-time" – Turner's words resonate.

The point is crystal clear.



*Liberty Hardware DC, with a fine shammy*



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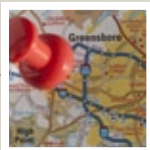
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## Piedmont Triad, North Carolina

### *Visions of an Aerotropolis*

have grand plans for building an Aerotropolis that will define the future of the region.

#### **All Things Being Different**

Wood product manufacturing and aviation aren't the likeliest of pairings—at least not since the days of the Wright Brothers. But with a little imagination and design, their complements materialize.

North Carolina's economic development advocacy is taking a similar approach by leveraging the state's diverse resources to market its differences.

"Each region of North Carolina plays its own important role," shares Don Kirkman, president and CEO of the Piedmont Triad Partnership. "We don't have a monolithic statewide economy. The coast has tourism; Piedmont Triad has manufacturing, transportation, and logistics. The Research Triangle has R&D and life sciences; Charlotte has a financial services sector."

Now both businesses and government are looking to expand North Carolina's transportation capabilities and use them as a means for tying these clusters together.

"Transportation and logistics transcend the economy in terms of producing and moving goods," says Kirkman. "It allows us to recruit new business over a number of core areas."

The debut of the new FedEx hub and plans for a web of manufacturing, distribution, and logistics infrastructure around PTIA will make the area a keystone for the state economy. The idea for an Aerotropolis is contingent on multiple forces. FedEx will bring business because of its brand, but the build-out of supporting resources and services is equally important.

"Major players come with a sophisticated need, which, in this case, is air freight," says Ted Johnson, executive director of Piedmont Triad International Airport. "But it wasn't our pretty faces that attracted FedEx. Good roads are important, too."

In many ways, the Triad's agribusiness legacy has created a foundation for attracting vertical industries and driving transportation infrastructure development. Now the latter is returning the favor

and the metamorphosis is already underway.

Honda Motor Company is building its new aircraft subsidiary at PTIA, with plans to manufacture its HondaJet nearby. "Not every component used to build that plane will be manufactured in Piedmont, so Honda will be challenged with getting parts here on a timely basis," adds Johnson.

That's why Honda and other companies sourcing mission-critical parts are locating near the hub. But even for non-traditional airfreight shippers, the promise of an Aerotropolis has a huge upside because

### *Shades of Blue*

At a welcoming reception sponsored by the Piedmont Triad Partnership, I find myself reaching beyond the Swedish meatballs for a way to introduce myself to a collection of local transportation and logistics luminaries. As a writer, it's rare that I find myself at a loss for words. But in public it's different.

After a series of fumbling handshakes and mumbled introductions, I ditch logistics and go straight for the familiar—college basketball.

"So, are you a Blue Devils or a Tar Heels fan?"

The reaction is immediate and charged. Quickly I learn the nuances of the Duke/UNC rivalry. Feeling confident, I go with the flow, pick up some nerve, and toss out my next question.

"How do you feel about the per-mile tax that has been pitched as a revenue source for North Carolina infrastructure projects?"

Apparently I know how to smother conversation as quickly as I can kindle it. Back to basics.

"So, what about Davidson...where do they fall in the pantheon of Carolina basketball?"



# Worth Our Salt

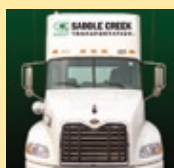
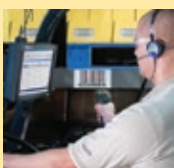
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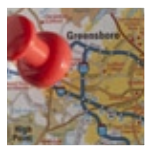
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## Piedmont Triad, North Carolina

### *Visions of an Aerotropolis*



*Piedmont Triad International Airport, the budding of an Aerotropolis*

it will attract more business to the area—business that will demand multimodal transport and specialized logistics capabilities well beyond the airport.

#### **Blazing New Paper Trails**

As a paper buyer, Carson-Dellosa Publishing falls a few rungs down the wood industry's evolutionary ladder. Three years ago, the educational publishing house located its headquarters and primary U.S. distribution center in Greensboro, largely due to its proximity to East Coast and Midwest markets, but also in anticipation of the new FedEx hub.

"The paper industry is not generally time-sensitive," says Rich Lugo, vice president of operations, Carson-Dellosa. "A one-day difference in transport doesn't warrant extra expense. But having options is nice."

The publishing company generally uses truckload and less-than-truckload (LTL) to manage its direct-to-dealer business. But in the summer, customer needs change. The ramp-up to the school year brings a corollary jump in direct-to-consumer business as tardy teachers requisition supplies—which demands more expedited shipments.

With the opening of the FedEx hub Carson-Dellosa can take orders at 2 p.m. and ship by 6 p.m. the same day. This offers greater flexibility in fulfilling time-sensitive West Coast orders, and Lugo anticipates pushing that dial even further to serve customers better.

Economic conditions also contributed to greater demand for expedited services. Dealers are handling inventory differently, and Carson-Dellosa's LTL



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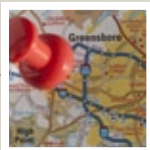
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## Piedmont Triad, North Carolina

### *Visions of an Aerotropolis*

shipments have dropped 40 percent.

"Dealers are buying in greater volume or ordering less, then expediting to fill flow," Lugo explains. "Some dealers don't want more inventory than they can sell, so they are not buying more than they need. Instead of ordering a box of books, for example, they might buy four books and choose second-day air. It has become more of a replenishment set-up."

Carson-Dellosa is heavily product-driven, so demand sensitivity and responsiveness is critical to delivering the best customer service. "We used to fall 10 days behind shipping orders," he adds. "Now, with our direct-to-consumer business, it's 24 hours. We're bringing service along with good product."

#### Onward and Upward

Out on the tarmac, you can appreciate the scope of PTIA's expansion project. Core samples stick out where lights will be planted along Runway 5L/23R, the 9,000-foot-long strip under construction to support the FedEx operation. The newly paved, coal-black ribbon of road lies amid reddish clay soil deposits that have been pushed about during the grading process. The runway waits for direction – the lights, lines, arrows, and signage that will guide freighters to and from the hub.

For airport officials, that direction has already been drawn out. The planning and construction of the FedEx hub has been a decade in the making, so anticipation is palpable.

Driving into the new FedEx facility, you feel that tide shifting, seismically so. But you wouldn't know it by the looks of things. A lone security guard seems overburdened by boredom as he dutifully inspects credentials. There is no one else around.

The boxy, off-white behemoth of a building dwarfs everything else around. It is nondescript except for a large FedEx logo on the airport-facing side. Inside, workers are likely fine-tuning the machinations that will help sort up to 24,000 packages per hour.

Outside, the hub is vacant. A few trucks linger but no airplanes are waiting in queue. It's eerily quiet and devoid of movement. But it won't stay that way for long.

You can imagine the pent-up energy and purpose ready to engulf this space, like a stock exchange before the bell rings. It's just a matter of time.

And that time is now. The Piedmont Triad's past and future are aligning as grass-roots industry and transportation innovation reveal a new root and route for economic development. The Tar Heel State is in full flight. ■

---

*The day before I arrived in Greensboro,* I was winging my way back from Northern Ireland, with a connection through London Heathrow's labyrinthine terminal. This time, fortunately, my luggage joined me in Newark. Flying into Piedmont Triad International Airport (PTIA) was a welcome reprieve. Regional airports tout accessibility and convenience as primary strengths, and PTIA is no different.

The objective of the Aerotropolis is to apply that same model to the cargo side of the business – to offer complementary modes, infrastructure, and services that facilitate product movement in and out of the region.

The expediency of air freight is a given. But the ability to maintain product flow and velocity is contingent on other factors. First- and last-mile delivery to and from the airport is important, as is adequate road and rail infrastructure. Foreign trade zones and bonded warehouses, technology and third-party logistics service providers, can help manage regulatory compliance and ensure timely transshipment. All these pieces will be part of the Aerotropolis.





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# The King of Beer Distribution

## DESTINATION:

*Nashua, New Hampshire*

## LOCATION:

*2nd-largest city in N.H., located in the southeast corner of the state*

## POPULATION:

*87,000*

## DISTANCE FROM INBOUND LOGISTICS HQ:

*233 miles*

*Family and business mix about as well as conflict and resolution.*

Often one is a consequence of the other. That makes exceptions to the rule all the more remarkable.

I found myself in an exceptional position when Bellavance Beverage Company, a family-owned Nashua, N.H., beer distributor, became a destination on my itinerary. No less extraordinary, my site visit was the direct result of an *Inbound Logistics* “kin-ection.”

*IL's* Print/Web Production Manager Shawn Kelloway was my gatekeeper to the Bellavance family business – as well as photographer and wickedly awesome interpreter in “the ‘Shua.”

In ethnography, local knowledge is a powerful tool. It opens doors and closets suspicion. To get inside Bellavance’s distribution facility and gather privileged insight from Sam and Joe Bellavance was truly remarkable – without exception.

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## Nashua, New Hampshire

### *The King of Beer Distribution*

When you've been in the beer distribution business for 108 years, there's no want for nostalgia. In fact, legacy is a calling card, the family name a revered brand. That's the impression you get visiting the Bellavance Beverage Company in Nashua, N.H.

In Bellavance's lobby, sepia-toned prints reach back in time to horse-drawn carriages, wooden kegs, and buzzing saloons—to when its story begins. In 1902, Joseph A. Bellavance hitched up his wagon and started a beer and liquor wholesale business in downtown Nashua. During the Prohibition era, the company survived by peddling soda and hand-rolled cigars. Then, when The Noble Experiment tanked, Bellavance turned its attention strictly to beer. By 1954, it had acquired distribution rights for Anheuser-Busch products in the Nashua area.

Just as quickly as time elapses out in the lobby, inside the office, halls decorated with Boston Red Sox and New England Patriots memorabilia bring the story immediately into the present. Over the past few decades, brothers Joe III and Sam Bellavance have been the custodians of the business their grandfather

built. They still play key roles in the company as chairman and vice president, respectively. But now they, too, have passed the reins to their sons.

Today, the fourth-generation, family-owned business is one of five Anheuser-Busch InBev wholesalers operating in New Hampshire, delivering more than three million cases of beverages each year to local grocery chains, convenience stores, and restaurants.

In 2004, Bellavance relocated to a new 79,000-square-foot warehouse and office space to accommodate business growth. Approaching the facility, nestled at the end of a quiet cul-de-sac surrounded by thick groves of sweet-smelling pines and manicured lawns, you immediately know where you are. The entrance is marked by a "BBC" totem emboldened below with Anheuser-Busch's "A and Eagle" brand. In the parking lot, license plates are bolder and less subtle: BUD4YOU, BUDWISR, BUDMAN, and LOU-P.

First appearances always leave an impression. But like a bottle to its beer, the outside is merely vanity—it's the inside that really counts.



*The Bellavance clan: Sam Jr., Sam, Joe III, and Joe IV*



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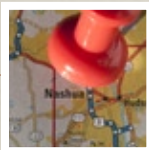
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## Nashua, New Hampshire

### The King of Beer Distribution

#### Manic Mondays

On a Monday morning, the Bellavance warehouse is a flurry of activity. Electric-powered forklifts hum in and out of racks stacked with countless brands of beer in equally variable configurations: six-packs, 12-packs, 18-packs, 30-packs, and a mix of both cans and bottles. Case-packed pallets in various stages of wrap sit in the middle of the warehouse as drivers and supervisors mill around.

The main 50,000-square-foot warehouse space is bright, airy, and cool. Monitoring climate control is important as season-to-season variances, both inside and out, can pose problems. For example, the warehouse can't be too cold in the summer or the cardboard packaging falls apart in the humidity, explains Sam Bellavance. A refrigerated draught room – filled with half barrels, quarter barrels, and “sixes” – is located in a recess off the main warehouse. It is always kept at 34 degrees.

Because Bellavance is closed on the weekend, Mondays are manic. It's the only time during the week when loads aren't built the night before, so salespeople are busy calling in orders and drivers scurry around, picking product from the racks and building pallets. When drivers finalize their loads for outbound delivery, checkers compare pallets with invoices to ensure accuracy. Complete loads are then shrink-wrapped and positioned for delivery on one of Bellavance's 21 trucks.

To help workers speed the flow of inbound and outbound inventory, the warehouse is separated into two different sections. “It's divided between holding racks, vertically categorized with different cases of canned and bottled beers, and supply stock that builds up as new product comes in from the brewery or its off-site DC,” says Sam Bellavance.

Racks, too, are set up in specific patterns so drivers know where to go to build their orders. The system operates much like a soda vending machine. Pickers pull SKUs from the racks to build daily loads and the mountains of neatly stacked floor stock on the other side of the warehouse are used to replenish the racks as demand dictates.

This U-shaped distribution flow flexes with inbound and outbound shipments. Bellavance pulls about seven to 10 trailers a day from the brewery and another DC. Tractors come in, unhitch trailers to offload,

*In the refrigerated draught room it's always 34 degrees*



*Bellavance and Budweiser, perfect together*





pick up empties, then return to the brewery for another trailer. Because Anheuser-Busch InBev's Merrimack production facility is located nearby, the distance and time it takes to move assets and inventory is negligible.

The distributor also frequently sources product from overseas, especially after Belgian brewer InBev's acquisition of Anheuser-Busch in 2008. "The increase in import draughts makes it easier for us to compete in the trade," says Sam Bellavance.

But it brings challenges, too. A typical container holds about 300 kegs and Bellavance rarely has enough demand to command a full box. So it shares space and costs with other distributors.

"We bring in one weekly container full of Heineken from Boston. We also import Stella, Becks, and Bass, among others. We split loads with other wholesalers on low-selling beer," he adds.

Bellavance is also responsible for returning barrels to point of origin, so it stores them in the warehouse until there are enough to fill a container and ship back. "A lot of money is tied up in these empty barrels, especially if you consider

they may only turn over three or four times a year," Sam Bellavance explains. "We have to account for all assets in the system because we get charged \$55 a barrel for each short unit. So we keep track of them."

#### A True Taste Test

The wholesale beer industry is all about rotation—in the warehouse and on retail shelves. Making sure older, but still-good beer moves first is important, so Bellavance drivers and salespeople are especially vigilant when visiting customers and checking inventory.

*Heineken...it's all about the beer*



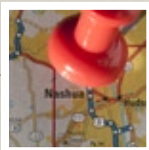
*Market Basket... where tastes collide*



*Stacks of Bud just in case*







**Nashua, New Hampshire**

## *The King of Beer Distribution*

### *It's All About promotion*

Like peanuts and pretzels, beer goes well with knickknacks and sports, too. As a distributor, Bellavance supplies drink promotions, menus, printed banners, and an assortment of other marketing gimmicks to its customers.

Walking through Bellavance's point-of-sale (POS) room, I find a treasure trove of booty. Some, like beer coasters, are very familiar; beer draught knobs are more obscure. Balloons, posters, napkins, serving trays, and countless other "things" branded with names such as Peak Organic, Beach Bum, and Hook and Ladder capture my eye. Like a kid in a toy store without an allowance, I touch and feel everything.

Then I see toys. Bars and restaurants often feature special promotions throughout the year to attract customers and business. In one corner of Bellavance's POS room, shelves teem with seasonal game promotions: hockey nets; flick football parts; ping pong balls; a rock, paper, scissors game; and a multitude of other paraphernalia.

In the beer business, sports and swag sell. And what Bellavance gives, it receives in equal spades. Employees get their fair share of free apparel, from the looks of things. Walking around the office, I see employees casually dressed in golf-purposed polo shirts branded with various beer logos.

I think, where else in the workplace do you see golf, Polo, and Bud Light threads converge so agreeably?

Driving along Amherst Street, a commercial strip northwest of downtown Nashua dotted with chain restaurants and industrial parks, you have to try hard to miss a Market Basket supermarket. Within a three-mile stretch there are three stores. The full-service New England grocer is among the many local chains Bellavance delivers product to.

In store #39, aisle #18—Market Basket's imported and domestic beer section—Bellavance's presence is all around. A large banner hanging from the ceiling reads, "Welcome to Market Basket's Beer and Wine Department." The signage was designed and printed by Bellavance's in-house marketing department.

A wide assortment of floor stock is neatly stacked in a mid-aisle island, hemmed in on one side by refrigerated beer displays, and on the other by shelves of room-temperature product. Market Basket sells every type of brand, in every size, quantity, and packaging you can imagine. Six-packs and cases, and all counts in-between, are stacked horizontally and vertically. Familiar long-neck Bud Light bottles and tubby 24-ounce keg cans of Heineken compete with exotic names such as Ipswich Mix, Shoals Pale Ale, and Magic Hat.

Beer is the only product grocery stores sell where the manufacturer does not pay for shelf space. "It's a free market, and the wholesaler positions products according to supply and demand," says Sam Bellavance. The wholesaler helps by drawing up CAD-like schematics for how the store should organize product in its display cases.

In the past, chain stores employed beer managers to keep track of inventory and place replenishment orders—but that is no longer the case. In the store, Bellavance's salespeople, merchandisers, and drivers manage the inventory and work together to rotate beer so the freshest product is in back and older beer is in front.

"The whole business is built on trust. Customers establish a baseline volume of inventory they need for the week, and trust us to control it. The volume varies week-to-week, but day-to-day orders are generally standard," Sam Bellavance adds.

Mom-and-pop shops generally want more control over inventory, but larger customers leave that

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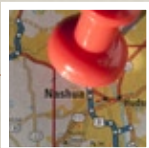


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## Nashua, New Hampshire

### *The King of Beer Distribution*

## *Where Everybody Knows Your Name*

Joining Sam Bellavance for a lunchtime diversion at Applebee's offers a fresh appreciation for the role of customer service in the beer distribution business—as well as New England culture.

Walking into a distinctive Bostonian chorus of “Hello, Sam!,” I feel like I’ve seen this on television before. There’s a friendly bartender—a family acquaintance—and a local Scot who greets me with “Cheers!” as I sample the restaurant’s Kona Longboard Island lager. Applebee’s is a Bellavance customer, so Sam is a familiar face. Conversation is friendly and local. Another patron joins our crowd, another friend.

It’s the same everywhere we go. In the Market Basket grocery store, employees greet Sam by name, and he responds in kind.

As one of Nashua’s oldest companies, and supplier to many of the city’s food establishments, engaging customers and the community is part of the job. Bellavance has built its business on a foundation of customer service and trust.

That’s why Bellavance has thrived for well more than a century—and why everyone knows Sam’s name.

to Bellavance. The wholesaler restocks product twice a week, on Monday and Friday, at most of its chain customers; smaller stores take deliveries once a week. For larger accounts, salespeople visit every day to keep track of what is selling and what isn’t.

“The salespeople control their own demand and inventory needs. It keeps customers lean because

they aren’t sitting on old stock and eating costs,” he explains.

Beyond making sure customers have inventory on hand, Bellavance’s greatest challenge is keeping product fresh. It’s a policy that drives the industry from production to distribution to sale.

Anheuser Busch pioneered “born-on” dating in the mid 1990s as an inventory management, quality control, and marketing tool. “Beer is held to very tight standards, stricter than the codes for milk,” says Sam Bellavance.

For Bellavance, the primary objective is to ensure out-of-code beer is removed from the supply chain—and that generally means product that is more than 105 days old. It’s a strict rule that Anheuser-Busch InBev adheres to. Wholesalers can lose their distributorships if they fail to comply. So Bellavance carefully monitors and inspects store stocks to confirm product meets these requirements.

Customers often want to order larger quantities at volume discount, which means the wholesaler has to be particularly diligent keeping track of beer and holding customers accountable. When beer is out of date, salespeople and drivers bring it back to the facility, where a third-party service provider removes and dumps the product.

“Salespeople are responsible for their accounts,” explains Sam Bellavance. “If they pick up old beer,

*pallets for unique palates*



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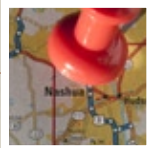
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## Nashua, New Hampshire

### *The King of Beer Distribution*

the buyer pays for it. If buying in volume becomes a problem because customers can't sell it, we won't sell to them. We have to be vigilant. We have to protect our product and brand."

Imports have fewer restrictions because preservatives are added to ensure quality isn't compromised during transport. Their shelf life can extend up to one year. For domestic beer, Bellavance usually carries about one month's worth of inventory in the warehouse, and sticks to a first-in, first-out system for pushing product through. If beer dwells for 45 days, the distributor has to report it to the brewery before it moves.

#### **Flexing to Demand**

Tuesday mornings in the Bellavance warehouse are markedly less chaotic. Loads for the day's deliveries are built the night before and trucks leave the

facility early in the morning. After the rush, a peculiar silence swallows the space.

A few employees stir about, positioning inventory and unloading a trailer that just arrived from the brewery. Blocks of floor stock that towered over the facility on Monday have eroded noticeably in 24 hours. As the week elapses, these cathedral-like aisles slowly collapse, feeding racks ready to fill the next day's orders. Then the cycle begins all over again.

Beer distribution is all about managing ebb and flow. Bellavance's distribution footprint allows it to scale up and down as seasonal demands vary or as new products come online. Still, the business is very much demand-driven. The distributor's sales force and truck drivers work in overdrive to understand the customer's preference, the retailer's need, and the brand's appeal. Then, Bellavance's warehouse flexes with, and delivers to, these demands. ■

*The wholesale beer industry is unique because it's countercyclical and demand is generally uniform.*

While manufacturers such as Anheuser-Busch InBev have felt the impact of the economic downturn, wholesalers have been more insulated. Patrons may frequent establishments less often in favor of home consumption, and therefore spend less, but Bellavance reaches the end user through one channel or another. I saw this firsthand – at Applebee's and in Market Basket.

The industry is not without its challenges, however. As much as consolidation plays a key role inside the warehouse, it's changing the manufacturing and distribution landscape, too. Anheuser-Busch InBev and Molson Coors Brewing Company are among the most recent and notable mergers and acquisitions in the United States. Contraction has been equally rampant in the wholesale space.

When Sam Bellavance started in the business, 22 wholesalers operated in New Hampshire. Today there are seven – Anheuser-Busch InBev has five; Molson Coors operates the other two.

Distributors grow by winning new beer contracts and acquiring other wholesale business. It's the nature of the game. But being a local link in a global supply chain requires an understanding of customer tastes and an appreciation for the brand – the reputation and quality it stands for.

That's why for global and domestic beer manufacturers and Nashua retailers – large, small, and in between – Bellavance strikes the perfect balance.

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# Plastics, Pellets, and Pallets

## DESTINATION:

Morris, Illinois

## LOCATION:

60 miles southwest  
of Chicago

## POPULATION:

13,800

## DISTANCE FROM INBOUND LOGISTICS HQ:

823 miles

*I had some inside information when I made arrangements with Jeff O'Connor, president of A&R Logistics, to visit its Morris, Illinois terminal – namely from 11 publisher, Keith Biondo.*

Keith had visited the intermodal facility earlier in the year and was so impressed with the operation that he suggested I include it in this article.

So my motivation was twofold: first, I was curious to see a business and facility so tied to a unique commodity – plastics – and with all the modal pieces in place; second, when the boss makes an unsolicited suggestion, you follow instructions first and ask questions later.



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## Morris, Illinois

### plastics, pellets, and pallets

Look around. Within physical or visual reach is likely some type of plastic. You may find a polypropylene blend, for example, in your car's cup holder or coffee maker's carafe basket. Polyethylene terephthalate, commonly called PET, is a thermoplastic used in manufacturing bottles.

For all the things that exist in the world, there are as many permutations of plastics, polymers, and resins, in powder, flake, and pellet form. You'll find as much, and more, in any number of drytainers, hopper cars, trailers, Gaylord boxes, and intermodal containers at A&R Logistics' Morris, Ill., terminal and headquarters.

As a dry bulk specialist, A&R Logistics earned its stripes hauling plastics. The brainchild of CEO James Bedeker began in 1969 with three trucks, transporting product to and from LyondellBasell's Equistar

### plastic irony

It's amazing how a moment's glance can take your mind spiraling through a supply chain. Seeing sample jars filled with different colors and variations of plastic pellets, powders, and flakes commingling with a bottle of spring water on A&R Logistics' boardroom table says it all—source to shelf in a split second.

I'm struck again in the warehouse as I watch plastic pellets pour into plastic bags—and raise my plastic pen to put that observation to paper. A mental photograph is worth an immeasurable number of words at A&R's Morris facility.

petrochemical plant—located within sight of the Morris facility. The carrier eventually began adding assets to the mix—first warehousing, then rail.

Today, A&R Logistics operates three domestic divisions including transport, global, packaging and warehousing, and manages a fleet of 820 tractors,



*The Eliminator... and heart of A&R*

1,770 dry bulk pneumatic trailers, 10 warehouses, and 23 terminals across the United States.

The company has ventured into other dry bulk business such as grain, soybeans, corn, sugar, olive oil, and slag. It has expanded its value-added resources too, notably in warehousing. But when the light of day illuminates the darkened depths of a dry bulk tank, there's no doubt. A&R is plastic to the core—down to the very last pellet.

### Yard Conversion

A walk around the A&R yard offers an up-close and personal view of the many functions at play in the dry bulk business. Foremost, uniform hopper cars fill the line of sight. Canadian National is the primary rail carrier for A&R's Morris facility, but CSX serves it as well. The 3PL does yard switching internally with its own locomotive. The bright blue GMTX engine sits idly by.

Railcars represent forward storage locations for A&R. So rail-direct delivery—taking pellets off line and delivering to customers via truck—represents about 90 percent of its business. On any day, the 3PL performs up to 125 rail-to-bulk truck transfers.

Beyond the tracks lie neatly organized colonies of drytainers and ocean intermodal boxes, owned by A&R and used predominantly for storage. To the left, a pair of Laurel and Hardy-like silos, one short and thick, the other towering and skinny, connect to a shed where trucks load grain.

Nearby, a shrinking slag pile with remnants of a much larger footprint, and human ones, too, draws curiosity. The U.S. Navy uses it as sandblasting material for cleaning ships. A&R turns the pile about twice a year.



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**Morris, Illinois**

## *Plastics, Pellets, and Pallets*

All around, A&R's pneumatic bulk tank trailers and flat bed chassis used to transport drytainers are poised and posed in various stages of progress. A few are tilted to load; some are detached and idle; still others are being readied for cleaning.

Vessels moving or storing plastic pellets need to be clean, dry, and odor-free to prevent contamination. A&R staff is vigilant about properly cleaning and inspecting equipment to the point of testing virtually every unit and providing inspection certificates and samples to customers.

Bumper stickers on A&R's trailers convey as much: "Right Railcar?" "Purge After Loading;" "Check, Check, and Recheck."

Excessive heat is another area of concern for temperature-sensitive cargo such as plastic pellets. Conveyance creates higher temperatures, which is problematic for a product that has varying melt points. So James Bedeker engineered a solution. On the trailers, air-conditioning units help control temperature variation and expedite the loading and unloading process.

### **Taking on the Eliminator**

But all is not what it seems in the yard. The red intermodal containers stacked inconspicuously in the background hold A&R's secret weapon—the "Eliminator."

Simple but effective is the best way to describe the 40-foot ocean containers imbedded with 1,500 cubic feet of aluminum lining—essentially a tank within a box. The invention, also created by Bedeker, does just what its name implies. It eliminates the need for disposable liners, as well as the dwell time of rail cars on track.

"We're merely changing the address of the inventory," says Rich Kennedy, yard operations manager, as a Kalmar lift truck places an Eliminator down for inspection. "One rail car has one address—five Eliminators have five addresses."

With its hatch removed, and a discharge hose hooked up to a hopper car, the vessel has the look of an aluminum heart pumping plastic through the system. Using pneumatic suction, A&R can remove 800 to 1,200 pounds of pellets each minute out of rail cars—which equates to 2.5 hours per unit.



*Laurel and Hardy, silo-style*



*Where Eliminators and hoppers converge*



*Sucking pellets...*



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## Morris, Illinois

### Plastics, Pellets, and Pallets

This efficiency and convenience helps the 3PL meet the plastics industry's stringent demand for just-in-time (JIT) movements, explains Jeff O'Connor, president, A&R Logistics.

"Plants demand compliance because they are very process-driven.

There are variables in terms of reliability and delivery to customers. Delivery time, plus or minus 15 minutes, must be exact. Standards are tight," he adds.

For longtime customers such as LyondellBasell, the Eliminator fits right into their supply chain strategy. A&R manages approximately 75 percent of the Houston-based petrochemical manufacturer's moves in North America and provides some packaging and warehousing services. It generally ships full rail cars from plants, but many times customers can't take rail cars or rail car quantities. So the Eliminator system helps LyondellBasell better manage inventory, build loads, and turn equipment.

"We have a hopper car network of around 9,500 units—which is quite large," observes Nathan Buza, manager of commercial logistics, LyondellBasell. "The faster we turn these cars, the fewer we need, and the less cost we have tied to these assets."

One hopper car feeds about four bulk truckloads. So instead of waiting for a corollary number of trucks to come in and unload a train unit, the Eliminator allows shippers to re-task assets without lengthy dwell periods. "With the Eliminator, we can turn cars in three or four days versus sometimes as many as 30 days," adds Buza.

The system also allows A&R and its customers to blend materials for the end user and fully utilize inventory. "For example, after unloading a rail car into bulk trucks, there might still be 1,000 or 2,000 pounds left over," explains Buza. "How do you manage that heel? Do you send it back to the manufacturer? This can create problems. With the Eliminator, excess inventory is stored, then used to top off other trucks as they come in."



*The A&R gang*

#### Big Box Storage

Unlike the red ocean containers stacked in A&R's yard, there's no mystery about what's in the boxes crowding the warehouse. Corrugated Gaylord containers filled with different types of

plastics are stacked three and four high—pallets sandwiched between—and feature customer names such as Forest Hill, Equistar, and Flint Hills.

The warehouse floor is spotlessly clean. A box not quite overflowing with floor-swept pellets serves as another reminder. So do the slick spots on the floor. It's slippery sterile.

Beyond efforts to prevent contamination, "responsible care" is a big part of the plastics supply chain, says Norm Buck, director of customer service and logistics administration, A&R Logistics. "We have trays underneath rail cars to catch over-flow spillage. We also have a responsibility to report any spills. A sweeper frequently circulates the warehouse, and a filter in the drainage catches any plastic pellets before they enter the water system."

To one side of the facility, paired silos positioned next to a rail siding are vacuum-sucking pellets from a rail car into boxes for packaging. Gaylord containers with bags inside rotate one-by-one along a conveyor belt as they are filled from above. A&R can transfer one train car compartment—a hopper has four—from bulk to box in 1.5 hours.

The soundscape is loud, filled with the hum and whir of the vacuum discharge operation. You can hear the pellets pinging through the industrial hose, and feel the vibration to the touch. Moving away from the packaging operation, layers and rows of cardboard dampen the noise.

The stacks of Gaylord boxes are purposed much like the drytainers and Eliminators outside in the yard. Product is placed in containers and customers have visibility to that inventory. As demand dictates, boxes are moved out by truck. If necessary, shippers

# How to be FEARLESS

An elephant is walking away from a silver car on a dirt road in a savanna. The elephant is in the foreground, and the car is in the background, facing the elephant. The scene is set in a dry, grassy area with some trees in the background.

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**Morris, Illinois**

## *Plastics, Pellets, and Pallets*



*Gaylord boxes filled with plastics*

can go from bulk to box storage back to bulk for redistribution—but adding touches is not the norm.

Manufacturers often use a blend of plastics in production—materials with different colors, textures, and heat points. Ordering volumes are equally flux. A customer might buy one type of pellet in bulk and order smaller shipments of another. A&R can deliver to customer preference—by rail car, tank truck, TL, LTL, in bags, boxes, and sacks.

The Morris facility is primarily used for regional distribution, serving customers within a 300- to 350-mile radius. But there are exceptions. Near one loading dock where LTL shipments are staged, a skid of shrink-wrapped boxes sits waiting for special delivery to Cologne, Germany. In another corner,

imported bags of PET wait to be moved or dumped and consolidated in a hopper car.

A&R uses another part of the warehouse for storage. “Pure warehousing is a value-added service for us,” says Buck. “Moving from one medium to another opened an opportunity and we took it.”

### **The Sum of its Parts**

A&R has grown into a full-service third-party logistics provider with a similar logic and linear progression. James Bedeker built the business by meeting a specific industry need—transporting plastics—then added resources into the mix as customer demand expanded.

Today, the Morris terminal is the convergence of A&R's business units—logistics, transportation, packaging, and warehousing. The conveyance is the key, as the multitude of railcars and trucks outside the facility demonstrate. These multimodal capabilities allow A&R to explore cargo opportunities beyond simply plastics.

But the less-apparent details stand out. A&R's innovative Eliminator system and trailer cooling units, and strict attention to cleanliness and safety, are the value-adds that make its transport parts gel. For shippers, finding a solution that meets a specific need is important. But finding a 3PL that can mold assets and services into a unique blend is paramount. ■

*Learning about the plastics industry and seeing A&R Logistics' business firsthand, I discovered an uncanny similarity between the two.*

I suppose you are what you carry.

Plastics can be fixed and malleable, pure or blended. The 3PL's value proposition shares a similar mix of qualities.

Its fixed assets – trucks, trailers, containers, track, warehouses, and terminals – each serve a specific and commoditized need. With its intermodal accessibility, warehousing footprint, and innovative inventory management tactics, A&R can also help customers blend these resources to unique specifications.

There's no steadfast way to describe everything A&R can do – except perhaps to say it's plastic.

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# Anything But Uncommon

*After one year of intermittent rambling and four months of episodic writing, I'm at a loss for words. So I turn to someone else's.*

Two years ago, I received John McPhee's latest book, *Uncommon Carriers*. The jack-of-all-trades author has always been a welcome addition to my bookshelf. His subject matter and descriptive writing style—ethnographic to the core—mirror my own sensibilities.

*Uncommon Carriers* struck a new chord though, because it's about transportation and logistics. McPhee tells his story by chugging along with a Union Pacific coal train, piloting scale-model containerships at a Swiss resort, exposing UPS' outsourcing secret, and hitching a ride with an owner-operator on a cross-country odyssey.

Reflecting on this last trip, McPhee writes: "If you have crossed the American continent in the world's most beautiful truck, you prefer not to leave it forever. You think of it from time to time—stainless, flashing like a signal mirror in the Carolinas, California, in Wisconsin, Wyoming, Oregon, and Georgia—and you want to climb back in the cab."

So he did. And I did, too.

I didn't have a truck cab; I had a taxicab. And my real vehicle was *Inbound Logistics*. From time to time, I, too, marvel at where it has taken me. In my mental

mirror, British Columbia, Virginia, Switzerland, Alaska, and Ireland, flash in and out of frame.

I suspect McPhee has carried this same impulse throughout his career, climbing back up in his "cab" to engage, interpret, and describe new people, places, and perspectives. This was my first time—and I'm just stepping down—but I have a new point of view. Trade articles are always embedded with a context that rarely sees the ink of press: first, the author's motivation; second, the interaction with sources—both people and places. It's rare when these threads are uniquely visible in the final fabric.

These stories are soaked in description to make an impression. They are also anchored by real-world issues—infrastructure, innovation, expansion, contraction—that industry tackles every day. The color commentary brings out the play-by-play details.

Like McPhee's imagined map, Belen, Elizabeth, the Piedmont Triad, Nashua, and Morris have joined mine. No doubt others will follow.

In retrospect though, I can't help but think that McPhee got one thing wrong. These stories are anything but uncommon.

They're everywhere. ■