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Novel Transshipment Project Comes to Port of New Orleans

By: Charles W. Nelson, P.E.

In April of 2012, Waldemar S. Nelson & Co., Inc. (NELSON) began preliminary work on a new project on Port of New Orleans property. Oil from as far away as the Bakken Field of North Dakota has spurred this project for one of the Port's tenants. This project entails the re-development of a port property that has seen two earlier uses. This brownfield project is recycling at an industrial scale, and it benefits from all the advantages of recycling that we do on a daily basis in our own homes.

Although "brownfield" is a term familiar to many engineers and own-

ers of industrial projects, it may not be as well-known to the general public. It is used to define and differentiate a project from a "greenfield" development.

Think of rural or suburban development of a subdivision, shopping center, public park or industrial plant, which has been built in your region on undeveloped "raw" land, or perhaps on land previously devoted to agriculture. Such greenfield projects convert property from one level of use to another, adding value to the community in which they are built.

In contrast, a brownfield project is one in which an already developed

parcel of real estate is converted from one use to another. A brownfield site may have been used in one industrial capacity for many years before being considered for re-development. Often, but not always, brownfield sites are converted from one industrial use to another. The term applies equally as well when a piece of commercial real estate is changed from a business use to a residential use, as has happened in the Warehouse District of the City of New Orleans over the past 25 years. Not only centuries-old warehouses, but bank buildings, high rise offices and other buildings have been converted to apartments, condominiums, hotels and time-shares.

The Port of New Orleans brownfield project is being rapidly developed in New Orleans, with Engineering, Procurement and Construction Management for this project executed by NELSON in our New Orleans and Houston offices. The project is located on the Gulf Intracoastal Waterway (GIWW), approximately 2 miles east of the Inner Harbor Navigation Canal (IHNC), on a site which has been a part of the Port of New Orleans for more than 50 years.

This stretch of the GIWW was first developed in the 1960's as the New Orleans Public Bulk Terminal and was centered on Elaine Street to provide access from Almonaster Blvd. to the waterway. Following changes in bulk commodity transportation

Bakken Field Well and Storage (North Dakota)





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C.G. Railway (2005)

logistics and the addition of more than a dozen bulk commodity storage and transshipment facilities on the Lower Mississippi River, the Public Bulk Terminal was decommissioned in the 1990's.



Public Bulk Terminal (Circa 1970)

In 2004 and 2005, this deepwater-fronting property was converted by C.G. Railway and Port of New Orleans into a rail ferry terminal for ocean-going ferries transporting a large variety of commodities between New Orleans and Mexico.

The shipping route used the Mississippi River Gulf Outlet (MRGO) to connect the port facility to the Gulf of Mexico. After Hurricane

Katrina in August of 2005, the MRGO was closed by the U. S. Army Corps of Engineers to protect wetlands east of New Orleans. Subsequently, the rail ferry operation shifted to Mobile, Alabama as its northern terminus. As a result, the Elaine Street marine facilities became dormant except for unsanctioned mooring of barge tows waiting to use the IHNC Lock.

Bulk Resources, Inc. has had

ongoing leases with the Port of New Orleans and the New Orleans Public Belt Railroad (NOPBRR) for landside facilities west of Elaine St. in New Orleans East since 2007.

At this operation, Bulk Resources cleans, services and prepares rail tank cars and highway tank trucks for their next cargo. Based on the success of that operation, Bulk Resources/Louisiana, LLC and Murex, LLC of Addison,

Texas partnered to build Gulf Gateway Terminal, LLC for transshipment of crude oil from railcars to barges on the GIWW. The terminal will be operated by SGS Petroleum Services Corporation of Baton Rouge, Louisiana. This focused, purpose-built facility will be able to receive bulk liquid products from six Class 1 railroads through switching services provided by NOPBRR.

This will allow producers to transport crude oil to New Orleans by rail for delivery via brown water (Mississippi River system) barges or blue water (ocean-going) barges to refineries with waterfront access.

The Bulk Resources LA/LLC facility will be developed in phases. The first phase will facilitate daily transfer of 70,000 barrels of light, sweet crude oil from unit trains arriving with 120 cars from origins as far away as North Dakota. Operational efficiency is the watchword for the entire project, including site layout, equipment selection, operations roster, and logistics planning. Based on experience from other rail-based operations in their portfolio, Bulk Resources' managers/owners and NELSON's engineers are steering the project to a fast-track completion.

Modification of the marine facilities remaining from the rail ferry operation received the first attention as NELSON mobilized to meet the needs of the project. Permits with multiple agencies sharing jurisdiction for the waterway were prepared, circulated

and expedited to integrate feedback from parties responding during the permitting process. Some of the existing structures were retained for the new facility. More structures are being added as necessary to configure the final facility for its new function to berth and moor the anticipated range of vessels. Designs for these additional facilities focused heavily on economical structures which could be built and installed quickly. Site and water level conditions at the GIWW are favorable for certain designs that would not be practical at locations on the Mississippi River, where annual stage variations of 15 to 35 feet are common.

Landside modifications to the rail infrastructure proceeded within weeks of the start of the marine facilities. Although less involved than permitting for marine facilities, a host of landside permit conditions and coordination was needed early in the design cycle. The



Purpose-built Access Gantry
Illustration and Gantry by Handling Specialties, Ontario, Canada

load 120 tank cars.

As the site has been used for more than 50 years, it is known to be stable and quite flat. Existing drainage will be maintained and enhanced, and road-

through underground piping that will run to the pumps to be installed in a concrete pump pit. Three 250-hp electric motor driven pumps will pump the crude to the new loading platform at the marine facilities. Two 35-ton cranes will handle the hoses to the ocean-going and river barges. A vapor collection system will be installed to collect vapors from the barges as they are filled and conduct the vapors to a thermal oxidizer (flare) on land. Appropriate control, safety and metering systems will be provided.

During railcar unloading, efficient and safe access must be provided to the tops of the railcars for opening vents. A unique rolling gantry will be built for this purpose. The gantry will be powered by its own diesel engine driven generator and electric drive motors driving steel wheels on rails. The gantry will support four gangways that workers will lower into place adjacent to the tops of railcars for safe access. Lights for night operation and gantry controls will provide precise and safe operations so that it can be accurately stationed at each railcar top.

The heart of the controls and operations will be located at the Master Command & Control Station (MCCS), a three-story building near the middle of the new facilities. The Control Room will be located in the windowed third floor, providing direct visual contact with all operations areas as well as closed-circuit TV and instrumentation monitoring and controls. The second



Marine Side Progress by Boh Bros. Construction Company

fact that much of the needed, parallel, high-capacity switchyard trackage had been in use in rail operations for many decades made some of the permitting issues easy. The existence of known and unknown subsurface utilities and infrastructure, however, became a detail requiring serious research and data gathering from Port archives, public utilities, State of Louisiana records, and NELSON's archives.

Phase 1 trackage will consist of four parallel tracks approximately 2,000 feet long to simultaneously un-

ways and parking areas will be defined as necessary for efficient plant operations. Area lighting and fire protection will be installed as required for safe operation and compliance with codes. Fire protection in the railcar unloading area will consist of hand-held extinguishers, hydrants, hoses, and fire monitors, as well as alarm and detection systems.

The railcar unloading facility will be used to transfer "light, sweet crude" to barges at the enhanced marine facilities. The crude will be drained from the railcars through flexible hoses

story of the building will be used for crew facilities: lunchroom, locker rooms, and restrooms. The ground floor will be used as an outdoor covered break area.

A “fast-track” design and construction approach is being used in order to begin operations in May 2013. In September, the first construction contract was awarded to Boh Brothers for off-site fabrication of marine facilities. Subsequently, multiple purchase orders for equipment and construction contracts for off-site fabrication have been awarded in order to expedite the project. On-site construction of site preparation, demolition, marine facili-



MCCS Building by Favalora Constructors, Inc.

ties, the MCCS building, the pump pit and gantry were begun in December by Sunland Construction.

In addition to vapor collection and treatment, environmental protection will be provided through collection of rain runoff from the marine loading platform and from the pump pit on land. The runoff will be pumped to a new coalescing-type oil-water separator. Additionally, environmental protection will be provided by drip/spill collection pans at each tank car and hose connection point. The operators will be trained and monitored to prevent drips or spills.

The electrical system will receive 480v service from Entergy at a new motor control center (MCC), from which all equipment will be powered. The 1200A MCC will be housed in a pre-manufactured electrical building, along with seven variable frequency drives and associated line/load reactors. The motor control center feeds

three 250HP crude oil transfer pumps, two 30HP marine cranes, redundant air and vapor blowers for the vapor recovery unit and flare, and a 150A feeder to the MCCS Building. The motor control center also feeds a manual transfer switch for an 80KW diesel generator which will provide

back-up power to the pump pit sump pumps, control power to the MCCS, and the emergency lighting on the site.

The facility is operated through the control system in the centrally-located Master Command and Control Station, built by Favalora Constructors, Inc., that communicates with multiple control panels strategically located throughout the site. Human Machine Interfaces (HMI's) are installed at the majority of the control panel locations for interactive control capability. The system is PLC-based and is designed in a ring topography to provide redundant network communications capability. Fiber optic Ethernet cabling is used between the input/output devices to provide robust data protection.

NELSON is also providing in-depth construction management services. In addition to the usual construction-phase engineering services (shop drawing review, response to contractors' questions, etc.), NELSON assigned one of our senior construction managers to begin work during early phases of the design to assist with decisions about constructability, economy, schedule, budget and measuring project progress. This work is continuing throughout the construction phase, including extensive on-site presence for coordination and communication with contractors and with NELSON's engineering and project management staff.

Upon the near-term completion of Phase 1 of the project, subsequent



Balfour Beatty Track Work

phases will proceed to add capacity for getting domestic crude oil to market. NELSON is proud to be a part of this exciting project and to work an extended design/procurement/construction management schedule to realize its early completion.

The Port of New Orleans

The Port of New Orleans is at the center of the world's busiest port complex – Louisiana's Lower Mississippi River. Its proximity to the American Midwest via a 14,500-mile inland waterway system, six Class One railroads and the interstate highway system makes New Orleans the port of choice for the movement of cargoes such as petroleum products, steel, rubber, coffee, containers and manufactured goods.

The Mission of the Port of New Orleans is to maximize the creation of jobs for Louisiana citizens using maritime, cruise and development activities. The Port's facilities include 22 million square feet of cargo handling area and more than 6 million square feet of covered storage area. The Port's facilities accommodate an average of 2,000 vessel calls each year.

(Excerpted from Port of New Orleans' website)

NELSON designed the public bulk terminal, bulk storage at the uptown silo, and many recent projects on inspections, repairs, and container facilities.

2012 Service Recognition Dinner



Ken Nelson, Bill Rushing, Charles Nelson



Charles, Brad Rogers, and Ken



Charles, Johnnie Clark and Ken



Holly Beaulieu and Charles

On Wednesday, November 7th, 2012, senior members of our staff and department heads gathered with honorees at Ralph's on the Park Restaurant near City Park for our Annual Recognition Dinner. This event is held each Fall to celebrate with those who have served full time and continually for twenty years or more. With delicious food and drink, coupled with a balcony view overlooking the park, it is a perfect setting to spend an evening sharing stories, reminiscing about days and years gone by, and celebrating our future together. We value the close knit relationships and appreciate not only the loyal service of our honorees, but also enjoy their friendship!

The year's "newcomers" with twenty year of service in the New Orleans office were:

- Jack Neelis, Electrical Department
- Brad Rogers, Civil and Environmental Department
- Bill Landry, Project Management Department
- Bill Rushing, Civil and Environmental Department
- Lee Fischer, Civil and Environmental Department
- Angela Fehn, Civil and Environmental Department
- Holly Beaulieu, Mechanical Department



Charles and Angela Fehn

Celebrating thirty years, we honored Tommy Braud of our New Orleans Electrical Department and Bart Harris, Head of our Civil Department in Houston and Senior Vice President of the firm. For thirty-five years of service, Johnnie Clark of the New Orleans Office Services Department was our sole honoree.

Our heartfelt thanks and congratulations to all! We look forward to continuing to work (and play) together.



Charles and Jack Neelis



Charles, Lee Fischer and Ken



Twenty Year Honorees



Charles and Bill Landry



Tommy Braud and Bart Harris

Holiday Celebrations & Giving



Linda Thach & Sarmad Khan Anca & Paul Iordache



Charles & Dottie Nelson with Ken Nelson



Ashley & Evan Gilbert, Aimee Hill in her special Christmas sweater



George Massey & Christine Doise



Angel Boudreaux and Slater Bass load up gifts donated by employees for The Salvation Army Angel Tree Program.



Tracey Gonzales & Sarah Wortmann in their special sweaters



Laura Lane, Caimy Harbison, Gloria Schultz and Susan Stewart



Johnnie Clark loading up the gifts for Volunteers of America in New Orleans



Debra & Tony Hoffman



L to R; Jaime & Verence Zamora, Steve & Kelli Otwell



Patti Griffin, Ed & LaTatiana Davis, Robert Griffin



Bill and Sheila Rushing with the Stage Door Canteen Victory Belles