ENVIRONMENTAL
DOCUMENT

SDB-3

BEFORE THE
SURFACE TRANSPORTATION BOARD

FINANCE DOCKET NO. 33388 (Sub-No. 79)

CSX CORPORATION AND CSX TRANSPORTATION, INC.
NORFOLK SOUTHERN CORPORATION AND
NORFOLK SOUTHERN RAILWAY COMPANY
-CONTROL AND OPERATING LEASES/AGREEMENTS-
CONRAIL INC. AND CONSOLIDATED RAIL CORPORATION

RESPONSIVE ENVIRONMENTAL REPORT AND ENVIRONMENTAL VERIFIED STATEMENT OF RESPONSIVE APPLICATION OF STARK DEVELOPMENT BOARD, INC.

In accordance with the procedural schedule issued by the Board in its Decision No. 6 in this proceeding, Stark Development Board, Inc. ("SDB") (owner of the Neomodal facility) hereby submits the following Responsive Environmental Report and Environmental Verified Statement.

Respectfully submitted,

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September 26, 1997

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VERIFIED STATEMENT
OF
BRUCE L. BREWER

My name is Bruce L. Brewer. I am President of CTI Consulting, a unit of Consolidated Technologies Corporation. My resume is attached and incorporated as Appendix A.

CTI Consulting has been involved in the development of the Neomodal Terminal facility from the outset, and I am thoroughly familiar with both the planning for, and operation of, the Terminal.

I am particularly concerned with the environmental benefits of the Neomodal facility which are recited in the environmental study attached and incorporated as Appendix B. In my judgment, the significant environmental benefits described in Appendix B will be lost if the Neomodal facility is bypassed by the Applicants in this proceeding.

Environmental considerations were an essential element of the Federal, State, and Local planning for the Neomodal Terminal. Congestion mitigation was a significant factor in the award of the Intermodal Surface Transportation Efficiency Act ("ISTEA") funds and the Congestion Mitigation and Air Quality ("CMAQ") funds to the Stark Development Board to design and construct this "state-of-the-art" Terminal.

The attached environmental study clearly reflects the benefits to Northeast Ohio of the increased use of the Neomodal Terminal in terms of reduced discharge of petrochemical smog and air pollution and reduced truck traffic on Ohio's highways.

All of the environmental benefits would be lost if this Terminal is bypassed by the Applicants in this proceeding.

STATE OF OHIO :

: ss

COUNTY OF STARK :

VERIFICATION

BRUCE L. BREWER, being duly sworn, deposes and says that he is President of Consolidated Technologies, and that he knows the contents of the attached Verified Statement and that it is true and correct; and that he has prepared the foregoing environmental study, marked Appendix B, knows the contents thereof, and that it is true and correct.

Bruce L. Brewer
BRUCE L. BREWER

Subscribed and sworn to before me by Bruce L. Brewer on this the 26th day of September, 1997.

Helen M. Bosick
Notary
Helen M. Bosick, Notary Public
State of Ohio

My commission expires: 4-6-98

Resume of Bruce L. Brewer

BRUCE L. BREWER - Currently President of (CTC) Consolidated Technologies Corporation and President & CEO of CTI Consulting the engineering operating unit of CTC.

BACKGROUND AND EXPERIENCE:

Mr. Brewer has extensive experience in the Engineering, Design, & Supply of Advanced Material Handling Systems and Equipment for all types of Applications as well as overall management and business planning responsibilities. Mr. Brewer has served as president of CTI from its inception in 1984 and also as president of CTC since 1992. In the course of performing this work Mr. Brewer has obtained patents for various types of material handling systems and machines which have provided innovative solutions not previously utilized by industry. Mr. Brewer has also been instrumental in the development of many new material handling systems concepts and equipment being utilized in various Transshipment and Industrial installations around the world.

Under the direction of Mr. Brewer, CTI has participated in many engineering and marketing studies, engineering analysis and concept development projects. Each of these required an in depth study and analysis of the problems being addressed. All of this experience and "know-how" is utilized in performing the CTI portion of work projects.

Mr. Brewer previously served in various engineering positions for Morgan Engineering, a company specializing in custom designed cranes and auxiliary mill equipment for the steel industry and a wide range of general industries. His last position was that of Manager of Engineering from 1980 to 1984 before forming CTI (Custom Technologies, Inc.). At CTI he has developed and completed designs for all types of integrated handling systems applications, cranes and other material handling equipment for automated and semi-automated operations.

REPRESENTATIVE ENGINEERING PROJECTS:

Mr. Brewer has been instrumental in the development and formulation of Integrated Automated Terminal (IAT) facilities for applications worldwide. These multi-purpose facilities are designed to efficiently handle large throughputs of breakbulk, neo-bulk, and containerized cargo. Each system contains unique features and methods utilizing the special machines and software as developed by CTI and associated companies. The design of each of these facilities represents the the latest "state-of-the-art" for material handling methods and controls and are designed to provide cost effective operations for the next 20 years and beyond. Designs developed includes the following;

1994-1996 - Design and supply of a "State-of-the-Art" intermodal facility for handling ISO containers & trailers to/from trains for Stark Development Board for installation in Stark County, Ohio. This facility contains many innovations not previously employed in this type of application.

1993-Present - Project management, design and supply of integrated and automated material handling systems for an integrated copper mill employing new mineral recovery systems for the Mineral Mountain Mining Company in Arizona.

Resume of Bruce L. Brewer (continued)

1990-1992 - Design of a full service port with semi-automated multi-purpose cargo handling facilities for bulk, neobulk, ro-ro, and breakbulk cargoes for TEMARSA for installation in Sagunto, Spain. The first phase of these facilities emply unique palletized or unitized cargo handling systems which includes transporters, special AGV AS/RS machines, special storage racks for reefer or dry cargoes, large terminal pallets, automatic pallet load/unload stations and all required computer systems software. The second phase will include other material handling systems and associated equipment for the handling of bulk grains, fertilizers and aggregates, ISO containers or neobulk steel and finished wood products from ships and the transferring the cargo through the facility to trucks or railcars for inland transportation.

1989-Present - Concept and project development and design of automated dry stack marinas and unique "live-aboard" areas for Marina Development Corporation for installation at various USA locations.

1988-1989 - Design and supply of a semi-automated breakbulk cargo handling import-export facility for the Apple & Pear Board for installation in Napier, New Zealand.

1985-1988 - Design and supply of a semi-automated multi-purpose import-export IAT breakbulk cargo handling system and facilities for Houston Terminal Owning Company for installation in Houston, Texas. This terminal employed CTI proprietary bag & box handling systems which included Spiralveyors and patented CTI Cargomover machines for warehouse, railcar & truck loading & unloading service.

1985 - Developed and engineered a patented utility powered AGV system for handling hot metal ladles for a grey iron foundry for General Motors.

1984-1985 - Designed a complete new family of woodyard gantry cranes for the Manitowoc Engineering Company of Manitowoc, Wisconsin

1983 - Developed and produced a patented expandable trolley design two girder type ladle cranes for AHMSA, Monclova, Mexico.

1982-1984 - Instrumental in the concept development, design and supply of a fully Integrated Automated "In-Process" Oil Field Pipe Storage & Retrieval System for U.S. Steel, in Birmingham, Alabama. Design and supply included fully automated gantry cranes, special automated Load/Unload Stations, 1100 stackable storage racks, and all computer system management and control systems. Positioning accuracy of +/- 1/8" in the x, y, & z dimensions.

1981 - Instrumental in the design development and supply of several 40 T Shipboard Cranes with folded cantilevers for ISO Containership service.

1978-1980 - Instrumental in the development and supply of several Semi-Automated Container Handling Systems for marshalling yard service at Matson Terminals, Ports of Richmond & Long Beach, CA. These represented the employment of the world's first automation of container handling gantry cranes. Positioning accuracy of +/- 2" in the x & y dimensions only..

1978 - Instrumental in developing and promoting "stabilized reeving" hoisting systems in place of guided steel columns for use on automated storage and retrieval cranes.

1977 - Instrumental in the concept development and supply of a semi-automated aluminum anode handling system for Alcoa, Rockdale, Texas. The position markers employed were maitrol bars.

1968-1981 - Instrumental in the design development and supply of the 510 MT shipboard cranes for the LASH and Feeder LASH ships.

1960-1984 - Engineered, designed, detailed and supplied all types of overhead travelling cranes and auxiliary mill equipment for the steel mills, electrical utilities, transportation and general industries for the Alliance Machine Company & Morgan Engineering in Alliance, OH.

1956-1960 - Designed electronic "black box" packaging componentry for missile guidance systems, system test equipment, and electrical/electronic systems for Goodyear Aerospace in Akron, OH..

1955-1956 - Electrical & Equipment Drafting for the C130-A aircraft at Lockheed In Marietta, GA.

1960-Present - Prepared many Technical Reports, Engineering Studies, Articles for Trade Magazines, and participated in the development and issuance of many Industry and Trade Guidelines.

EDUCATION: **Bachelor of Science** in Aviation Technology from Kent State University with subsequently various short courses and seminars concerning all aspects of business management and technical developments applicable to solving material handling applications and engineering problems .

ASSOCIATIONS:

- Association of Iron & Steel Engineers (1973 THRU 1989)
- Material Handling Institute - Crane Manufacturers Association of America Product Section (1980-1984)
- Material Handling Institute - CTI representative to the Integrated Systems and Control Product Section (1987-1992)

Biography of Bruce L. Brewer

BRUCE L. BREWER - Currently President of (CTC) Consolidated Technologies Corporation and President & CEO of CTI Consulting the engineering/operating unit of CTC.

Mr. Brewer has extensive experience in the Engineering, Design, & Supply of Advanced Material Handling Systems and Equipment for all types of handling applications as well as corporate management and business planning responsibilities. He has served as president of CTI from its inception in 1984 and also as president of CTC since 1992. In the course of performing this work Mr. Brewer has obtained patents for various types of material handling systems and machines which have provided innovative solutions not previously utilized by industry. Mr. Brewer has also been instrumental in the development of many new material handling concepts and equipment being utilized in "State-of-the-Art" Integrated Automated Terminal (IAT) facilities for applications in marine, transshipment, and industrial installations and are designed to provide cost effective operations for the next 20 years and beyond. The most recent one being the NEOMODAL Terminal in Navarre, Ohio.

These multi-purpose facilities are designed to efficiently handle large throughputs of breakbulk, neo-bulk, and containerized cargo. Each system contains unique features and methods utilizing the special machines and software as developed by CTI and associated companies. The CTI scope of work usually includes the overall concept and project development, the design and supply of automated and semi-automated handling systems and equipment for the project.

Before founding CTI Mr. Brewer had previously served in various engineering, design, and management positions within the material handling industry. His last position, immediately before forming CTI, was that of Manager of Engineering from 1980 to 1984 at Morgan Engineering, a company specializing in the supply of custom designed cranes and auxiliary mill equipment for the steel industry and to a wide range of general industries. At CTI he has directed the development of designs for integrated handling systems, cranes and other material handling equipment for automated and semi-automated operations and for use in all types of handling applications.

Under the direction of Mr. Brewer, CTI has participated in many engineering and marketing studies, engineering analysis and concept development projects. Each of these required an in depth study and analysis of the problems being addressed. All of this experience and "know-how" is utilized in performing the CTI portion of work projects.

Mr. Brewer is a graduate of Kent State University with a Bachelor of Science in Aviation Technology and supplemented with various courses and seminars concerning business management and technical developments applicable to material handling. In his past duties Mr. Brewer has participated in industry trade associations such as; the Association of Iron & Steel Engineers (1973 through 1989); Material Handling Institute - Crane Manufacturers Association of America Product Section (1980-1984); Material Handling Institute - CTI representative to the Integrated Systems and Control Product Section (1987-1992); has published several articles for trade papers; and has participated in various industry seminars and workshops.

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ENGINEERING ANALYSIS

Energy & Environmental Benefits

of

the "NEOMODAL" Intermodal Terminal

Located at Navarre, Ohio

By: Bruce L. Brewer
President - CTI

APPENDIX B

Energy & Environmental Benefits of the "NEOMODAL" Intermodal Terminal

The energy and environmental benefits to be derived from the availability and usage of the "NEOMODAL" intermodal terminal is the reduction in the expenditure of energy (diesel fuel) and the elimination of excessive pollutants from diesel truck emissions into the atmosphere.

The premise outlined in the beginning of the project indicated that the facility would eventually reduce truck traffic by as much as 10,000 annual truck trailer trips of an average of 500 miles for a total of 5,000,000 miles with an accompanying reduction in the consumption of 715,000 gallons of diesel fuel. Environmental benefits are related to energy consumption reduction which in turn reduces the emission of volatile organic compounds (VOC) and nitric acids (NO_x) which contribute to the build-up of carbon monoxide, sulfuric and nitric acid formation and ozone. Reducing vehicle miles traveled is an important measure that will assist in attainment of the clean air goals.

In addition the use of the "NEOMODAL" intermodal terminal will reduce the truck traffic and the resulting congestion of the major interstate and U.S. routes and the major urban areas within Ohio which will also help improve highway safety. Truck drivers had the most deaths of any job in 1996 (Reported in the Canton Repository on 9-17-97)

Background:

The following data will help demonstrate the resultant benefits of usage of the NEOMODAL intermodal terminal to the residents of Northeast Ohio. First we will review the particulars of internal-combustion engines relating to their environmental effects.

Internal-Combustion Engines:

The use of internal-combustion engines in automobiles is the major source of air pollution and a significant contributor to petrochemical smog. Emissions from these internal-combustion engines include those from blowby, evaporation, and exhaust. These can vary considerably, in amount and composition depending upon engine type, design, and condition, fuel-system type, fuel volatility, and engine operating point.

Transportation-engine emissions comprise 42 percent by weight of all U.S. man-made air pollutants. Five categories of air pollutants, and the percent contribution from gasoline and diesel engines involved in transportation are listed in the table below as compiled by the U.S. Department of Health, Education & Welfare:

	Carbon monoxide	Hydrocarbons	Sulfur oxides	Nitrogen oxides	Particulates
Millions tons (kg) per year	100.1 (91,000)	32.0 (29,000)	26 (23,600)	20.7 (18,800)	12 (11,000)
Gasoline % Diesel %	59.0 0.2	47.5 0.7	3.9 Incl. in above	31.8 2.9	8.5 Incl. In above

Emissions from Gasoline Engines:

For every 1000 gallons of gasoline consumed by an automobile's internal-combustion engine, there are discharges the following air pollutants, in pounds:

- carbon monoxide 3,000#
- hydrocarbons 22 to 400#
- nitrogen oxides 50 to 150#
- aldehydes 5#
- sulphur compounds 5 to 10#
- organic acids 2#
- ammonia 2#
- solids 0.3#

Emissions from Diesel Engines: (Note: over 90% of large trucks use diesel engines)

The amount of carbon, carbon monoxide, hydrocarbon, and nitric acid emission from diesel engines varies considerably with engine and fuel-system design as engine operating point. Diesel engines emit hydrocarbons in the range of 50 to 500 ppm C_6 and NO_x up to 3,000 ppm. Carbon monoxide emission from the diesel is very low, typically under 1,000 ppm (0.1 percent), however diesel engines emit considerable amounts of carbon smoke and odor constituents.

Emissions from Heavy-Duty Engines:

Emissions for heavy-duty engines, both gasoline and diesel, are determined in steady-engine dynamometer tests. For diesel engines 13 operating modes are assessed including idle and various loads at the peak-torque and peak-power engine speeds. For gasoline engines a 9 mode test consisting of various loads at 2,000 RPM is specified. Gaseous-emission results are calculated in grams per horsepower-hour by applying weighing factors to the modal results. Smoke particulates from diesels are assessed by using a light-beam-extinction procedure to determine opacity.

The following table depicts the Emission Standards for Heavy Trucks (over 6000 lb GVW), Gasoline and Diesel Engines:

Test procedure (engine dynamometer)	1975-1976 California Mass (g/bhp h)*	1975-1977 Federal Mass (g/bhp h)*	1977 Calif. 1978 Federal** Mass (g/bhp h)*
Hydrocarbons	10	16	5
Nitrogen oxides			
Carbon monoxide	30	40	25
Evaporation, g	***	***	***

* Standards combined for HC + NO_x

** Standards Assumed.

*** Evaporative controls required on all heavy-duty trucks, effective 1973 California (January 1974 on units with fuel tanks over 50 gallon) assumed nationwide in 1978. Diesel engines subject to federal smoke regulation. Smoke opacity, 1974: acceleration 20 percent, lug 15 percent, maximum any mode 50 percent.

Current Parameters for Emissions for diesel powered trucks:

1997 Data figures as received from the EPA Office of Mobile Services in Ann Arbor Michigan are:

Hydrocarbons	2.4 grams per mile
Carbon monoxide	12.0 grams per mile
Nitrogen oxides	13.6 grams per mile

"NEOMODAL" OPERATIONS - Evaluation of the effects of operating the "NEOMODAL" Intermodal Terminal at various levels of shipments and the resultant savings.

Assumptions: Based on the projected levels of volumes the following levels of emissions and the resulting reduction of pollution can be expected:

EMISSIONS & FUEL SAVINGS

Volume of Container/ Trailers/ year	Average Shipment Distance (miles)	Local Truck Distance (miles)	Railroad Travel Distance (miles)	Emissions savings per year			Fuel Savings @ 6 MPG *
				Hydrocarbons	Carbon monoxide	Nitrogen oxides	
5,000	500	50	450	5,400 Kg	27,000 Kg	30,600 Kg	375,000 gal.
10,000	500	55	445	10,680 Kg	53,400 Kg	60,520 Kg	741,667 gal.
15,000	550	60	490	17,640 Kg	88,200 Kg	99,960 Kg	1,225,000 gal.
20,000	600	65	535	25,680 Kg	128,400 Kg	145,520 Kg	1.783,333 gal.
25,000	625	75	550	33,000 Kg	165,000 Kg	187,000 Kg	2,291.667 gal.
30,000	650	80	570	41,040 Kg	205,200 Kg	232,560 Kg	2,850,000 gal.
40,000	675	90	585	56,160 Kg	280,800 Kg	318,240 Kg	3,900,000 gal.
50,000	700	100	600	72,000 Kg	360,000 Kg	408,000 Kg	4,875,000 gal.
60,000	750	110	640	92,160 Kg	460,800 Kg	522,240 Kg	6,400,000 gal.
75,000	800	120	680	122,400 Kg	612,000 Kg	693,600 Kg	8,500,000 gal

Note: * net of rail engine fuel use assuming a 60 railcar string and assumption of crane fuel use.

As can be seen from the above table the fuel savings and reduction of emissions are affected by the volume of containers or trailers handled by the intermodal terminal and the distance traveled by the trucks in delivering the cargo to/from the intermodal terminal and the distance the cargo was originally to be shipped by truck. The assumptions allow for a one way travel of the drayage trucks at either end of the shipping cycle. As the volume increases the average distances from which the cargo is trucked is most likely to be increased as new customers are found.

The 75,000 shipments equates to 150,000 lifts per year by the cranes within the Intermodal terminal and does not account for any neo-bulk cargo handling activities. The savings in fuel and emissions is dependant upon cargo volume and the distances to be shipped.

References: *Mark's Standard Handbook for Mechanical Engineers - Re: Internal-Combustion Engines and Air Pollution*
EPA Office of Mobile Services, An Arbor, MI - Terry Newell