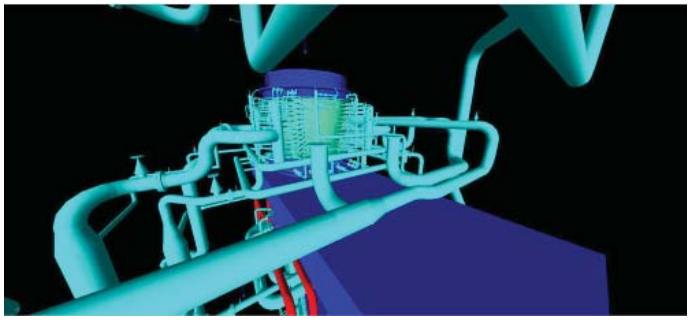
Thomasson Industrial Services

Qualifications

with emphasis on
Automotive



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Overview

TIS has senior professionals in key leadership roles in the major disciplines and has strategic alliance firms that provide additional capacity and specialized capabilities to suit the requirements of specific project types and localities.

Thomasson Industrial Services (TIS) is a full service professional planning, design and consulting firm that provides all disciplines required for planning and design of industrial site and facilities, manufacturing and industrial processes, and power generation and energy-related projects.

TIS is an alliance of I. C. Thomasson Associates, Inc. (ICT), a consulting engineering firm headquartered in Nashville, Tennessee, with prominent design firms Design Innovation Architects, Manous Design, and Carpenter Wright Engineers. ICT has provided consulting engineering services across the USA and abroad for decades in a wide range of market sectors. TIS offers planning, consulting, design, construction/start-up support and program/project management services to our clientele in the industrial, process and power generation and utilities market sectors:

- Master Site, Infrastructure and Facility Planning
- Facilities Assessments
- Building Information Modeling (BIM)/3D Design
- Site/Civil Surveying and Engineering/Landscape Architecture
- Architecture/Life Safety & Codes Analyses
- Sustainability Consulting Services/Renewable Engergy Design
- Structural Engineering/Integrated Steel Design
- Mechanical Engineering (HVAC, Plumbing, Piping)
- Fire Protection Engineering/Explusion Protection & Prevention
- Refrigeration Engineering (Central plants and split systems; distribution systems; cool rooms; cold storage)
- Electrical Engineering (Power, Lighting, Low Voltage/Specialty systems)
- Electrical Distribution Systems Engineering
- Process/Mechanical Engineering (Planning Studies, Equipment Layout, General Arragnement, Equipment Installation Packages, P&IDs, Utilities Capacity Analysis and Design)
- Industrial Systems Engineering/Layout and Workflow Optimization
- Material Handling Systems
- Lean/Continuous Improvement Strategies and Impementation
- Controls & Instrumentation Engineering (Real-time Automation, Data Acquisition, Custom Controls/ Operator interface, Analytical Instrumentation and Environmental Monitoring)
- Energy Engineering and Consulting/Energy Assessments
- Environmental Engineering, Permitting and Consulting Services
- Water/Waste Water Treatment and Distribution Systems Engineering
- Intelligent Transport Systems (fiber/broadband, data/comm, IT)
- Construction Start-up Support/Field and Commissioning Services
- LEED Commissioning, and Measurement & Verification services
- Bidding/Negotiation/Procurement Phase SUpport Services
- Construction Phase Support Services
- Program and Project Management Services

I. C. Thomasson Associates, Inc.

- Founded in 1942
- Employee owned
- Over 200 professional employees
- 69 Professional Engineers
- 14 LEED accredited professionals
- Corporate Headquarters - Nashville, TN
- Over 600 projects each year, large and small
- Many projects from repeat clients

I. C. Thomasson Associates, Inc.

Thomasson
Industrial Services

Our Alliance Partners

Carpenter Wright Engineers
Structural Consultants

- Established: 1976 (44 yrs. in business) with offices in Nashville, TN & Knoxville, TN
- Sectors: Industrial, Institutional, Commercial, Residential and Infrastructure Structures
- Specialties: Manufacturing Facilities for steel, automobiles, tires, plastics and food
- Specialty Skills: Mission-critical Data Centers and Long-Span Aircraft Hangers
- Unique procedures to accelerate the design, fabrication and delivery of steel framing systems.

DIA
Design Innovation
ARCHITECTS + INTERIORS + PLANNING

- Established: 1989 (30 yrs. in business) based in Knoxville, TN
- Services include: architecture, interior design, land planning, and project management
- Sectors: Multi-Family & Single- Family Residential, Corporate, Commercial, Hospitality & Theaters, Retail, Food Service, Industrial / Manufacturing, Religious, Educational, and Health Care
- Project Size from 2,000 sq. ft. to over 1,000,000 sq. ft. with budgets from $50k to upwards of $200m

MANOUS DESIGN

- Established: 1992 (over 25 yrs. in business) based in Lebanon, TN
- Services include: Architectural Design, Life Safety, Master Planning, Civil Engineering, Structural Engineering, Interior Architecture & Design, Landscape Design, 2D and 3D Computer-Aided Designs
- Budgets have ranged from $250,000 to more than $250 million
- Projects include everything from private residences to master-planned projects, from historic restorations to mixed-use retail centers, and from commercial distribution centers and industrial facilities to country clubs.

Hankook Tire Manufacturing Plant
Phase 2
Clarksville, TN

DBS and Associates Engineering, Inc.
Civil

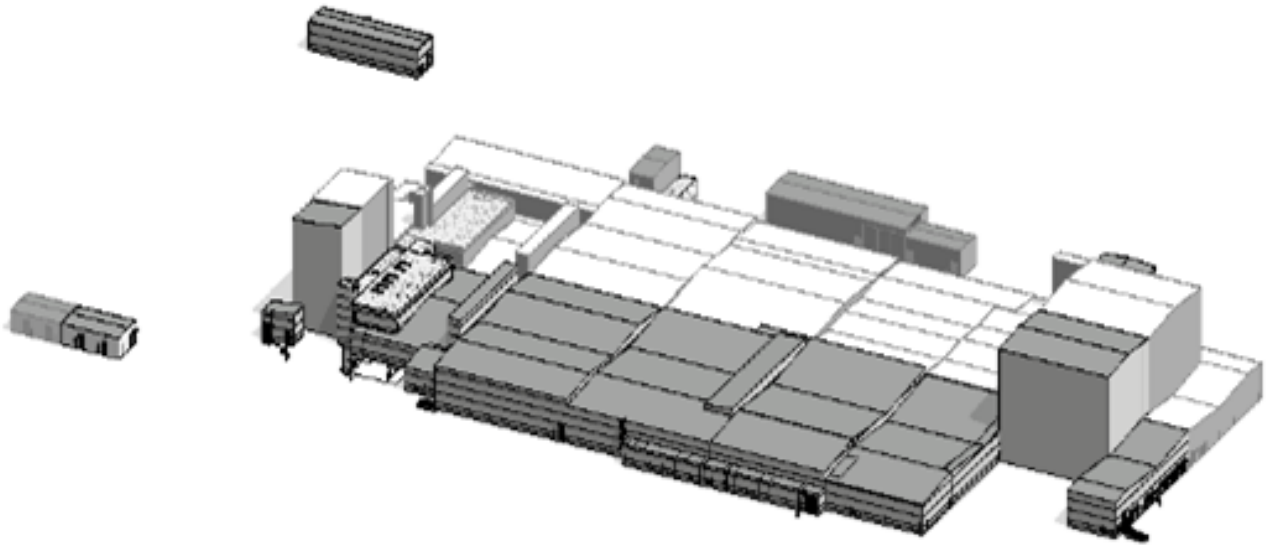
Carpenter Wright Engineers
Structural

I. C. Thomasson Associates, Inc.
Process Utilities, Mechanical, Electrical, and Fire Protection Design

Design Innovation Architects
Architect

Manous Design
Architect

Full A/E Services were provided by the Thomasson planning and design team, teaming with a Construction Management firm, acting as the Owner's Representative / Project Manager for the Phase 2 expansion design-build contract of the 1,060,000 SF main plant and ancillary buildings. The Project Management team developed the RFP and Design Bridging Documents used to secure final Design-Build proposals from select, invited bidders.



Mercedes Benz
Body Shop Expansion

Design Build

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection Design

Construction Cost
$205,000,000

Completion Date
05/2018

The project is a 1,700,000 SF addition to the existing plant, bringing the overall size of the plant to approximately 7,000,000 SF. The project consists of renovation and equipment additions of two new approximately 2,500 ton duplex centrifugal chillers in a series arrangement in the Energy Center along with corresponding pumping and cooling tower addition. There is replacement of an older smaller boiler with a new larger approximately 28 MW boiler for hot water generation. The project consists of a Wiring Harness addition as well as an addition to the logistics space on the north side of the facility. In close proximity to the Wiring Harness and North Logistics Expansion is the East Assembly expansion which involves the marriage process of the drive train to the chassis. The bulk of the project consists of the approximately 1,200,000 square foot body shop expansion on the west side of the plant. This portion of the project involves relocation of the free trade zone (FTZ) fencing as well as relocation of underground utilities. Design involved coordination with corporate office facility design/plant engineering as well as vendor (conveyor and robotic) coordination.

The project includes the following items:

- Chilled Water
- Hot Water
- Weld Water Condenser Water system
- Compressed Air
- Argon
- Nitrogen
- Natural Gas
- Electrical Service Upgrade
- Main Service Rerouting with switch over during schedule plant shutdown
- Telecommunications
- Custom Rooftop chilled water air handlers
- Displacement Ventilation System with “Dissolved Columns”
- Dust Collection Systems

Nissan North America
Compressed Air and Chilled Water Plant
Phases I and II
Canton, MS

ICT designed a complete Central Utility Plant that serves the needs of a new 2,000,000 SF automotive plant. The plant has a capacity of 250,000 vehicles a year producing full-sized pickup trucks, full-sized sport utility vehicles, and the next generation mini-van.

Features

- 31,000 tons of 41 degrees F chilled water
- 25,000 scfm of 100 psig compressed air
- 36,000 scfm of 110 psig compressed air
- All required auxiliaries including: cooling towers, pumps, dryers, automated computer controls, and bridge cranes

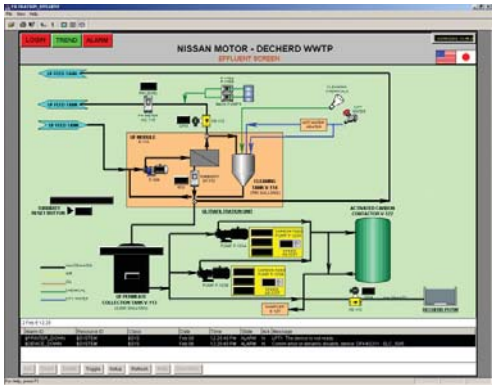
Design Build

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Controls

Controls

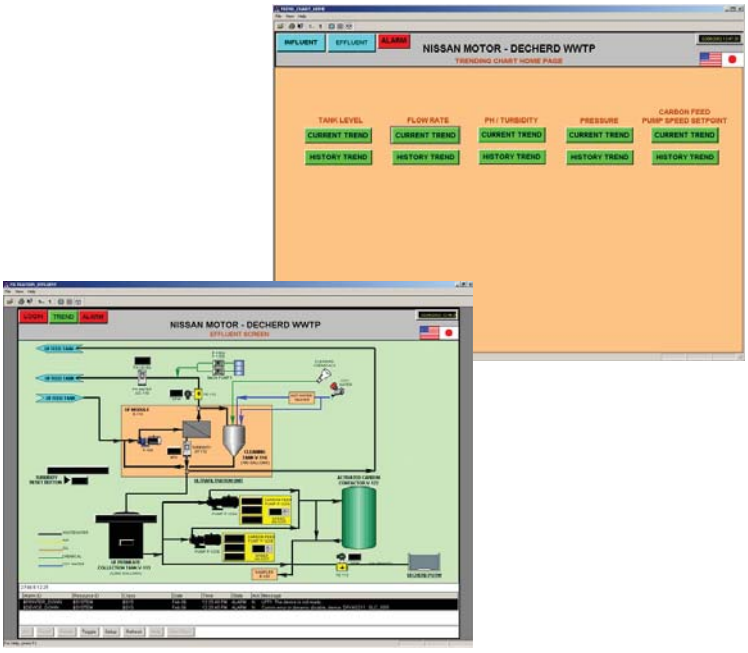
Provided controls design, configuration and commissioning for new air compressor and chilled water plant. Control system design based upon GE PLC's and Cimplicity HMI platform.

Nissan North America, Inc.
Waste Water Treatment Station
Decherd, TN



I. C. Thomasson Associates, Inc.
Mechanical, Electrical, and Controls

Nissan North America, Inc. chose I. C. Thomasson Associates to provide engineering services and the control system for a new waste water treatment station at the new facility in Decherd, Tennessee. The Allen-Bradley PLC system furnished by ICT was delivered on schedule, and all programming was completed. Design included Allen-Bradley PLC with logic, all panel and field wiring, field instrument specification and start-up. Start-up commenced after all wiring and piping was complete.



Thomasson
Industrial Services

Corporate Headquarters
Nissan North America
Franklin, TN

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

ICT provided mechanical, electrical, plumbing and fire protection design for the 450,000 SF, 10-story Class A office building located in Cool Springs Office Park.

Features

- Nine stories of offices
- One-story parking garage underneath offices at grade
- Fitness center
- 50-acre site
- Corporate data center
- Conference center/meeting rooms and auditorium
- Guard station
- Building operations center
- Loading dock
- Kitchen
- Cafeteria
- Entry atrium
- Under-Floor Air Distribution Systems
- Water side HVAC economizer
- Variable speed primary only pumping
- Variable speed chillers
- Efficiency greater than ASHRAE 90.1 for chillers
- Variable speed cooling tower control
- High efficiency glass
- Sunshades
- Increased wall and roof insulation
- Daylighting controls

Saturn Spring Hill
Module II Land Plan
SSPO, Body Fab, Visitor's Center

Carpenter Wright
Engineers, PLLC
Structural Design and
Support

Manous Design
Architect

Thomasson
Industrial Services

Denso Manufacturing Tennessee, Inc.
Building 701 Plant Expansion
Athens, TN

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

This project doubled the existing 701 Plant from 180,000 SF to over 400,000 SF to manufacture a patented direct fuel injector system for automobiles.

The project includes a new 2400 ton chiller plant, steam boilers for humidification, hot water boilers for heating, process water cooling for four kw centrifugal air compressors, a new web based DDC control system designed to integrate/upgrade existing controls serving the entire campus and process utilities.

ICT provided mechanical, electrical, plumbing and fire protection design for the new facility.

Carpenter Wright Engineers provided structural engineering design.

Denso Manufacturing

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

Building 500 Cafeteria and Office Addition
Athens, TN

ICT provided mechanical, plumbing, electrical and fire protection design and construction administration for the addition to Building 500.

Features

- Office addition
- Full service kitchen and cafeteria seating 220 people
- 12,000 SF

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, and Plumbing

Building 601 Stick Coil - Phase II
Athens, TN

ICT provided mechanical, electrical, and plumbing design services for the upgrade of facilities equipment and infrastructure to support the installation of the Stick Coil Phase 2 production line.

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

Building 201 Print Room
Maryville, TN

ICT provided mechanical, plumbing, electrical and fire protection design and construction administration for Denso's printing facility. Denso manufactures instrument clusters for automobiles. The silk screen covers for these instrument clusters is made in this facility.

Features

- 8,000 SF
- Upgraded ventilation and filtration system to make it a Class 10,000 clean room

I. C. Thomasson Associates, Inc.
Mechanical

Building 101 Data Center
Maryville, TN

ICT provided an HVAC study as well as mechanical design for an upgrade of units in the data center.

Denso Manufacturing
Athens, TN

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

801 Facility - Phase I

ICT provided mechanical, plumbing, electrical and fire protection design and construction administration for development of Denso's Athens facility. The Athens facility manufactures catalytic converters for various automotive companies such as GM, Mazda, Chrysler, Toyota, Harley Davidson.

Project Scope

- Worked directly with Denso's Japanese and American facilities engineers to develop conceptual designs, budget estimates and schedules
- Supervised preparation of drawings and specifications and oversaw construction management and inspection
- Completed on time and within budget
- 52,800 SF

801 Facility - Phase II

ICT provided engineering services for the design and construction of the 801 Facility expansion at the Athens site. The project consisted of a 25,000 SF addition to the north and east sides of the existing building.

Bridgestone Warren Facility
1,250,000 SF
Morrison, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

Thomasson
Industrial Services

Bridgestone Warren Facility
Employee Services Building
Morrison, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

Thomasson
Industrial Services

Bridgestone Warren Facility
Truck and Bus Radial Tire Plant
Morrison, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

Carpenter Wright Engineers, PLLC, was in responsible charge for the structural design and support of the buildings and equipment foundations for a 1.2 million square foot grass-roots tire manufacturing facility:

- Tank Farm
- Carbon Black Unloading and Storage Facility
- Plant Services Building
- Banbury Process Building
- Cement House (Concrete package & Equipment foundations)
- Calendering Building (Concrete package & Equipment foundations)
- Creel Building (Concrete package & Equipment foundations)
- Receiving Building (Concrete package)
- Stock Prep Building (Concrete package)
- Tire Assembly Building (Concrete package)
- Curing Building
- Final Inspection Building
- ASRS Building – Automatic Storage and Retrieval System
- Powerhouse Building
- Pumphouse Building
- Process Building and Process Piping Support
- Oil Pumphouse & Oil Storage
- Dust Collection Facility
- Employee Services Building
- Temporary Warehouse for Equipment Staging & Testing

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

- Process spot cooling
- Powerhouse equipment installations
- Cable splice guard
- Analysis of hydronic central plant and distribution system
- QC calendar process exhaust
- Hydronic system piping
- Extrusion area process piping and quality review for remaining areas of building expansion
- Extrusion area HVAC
- LEED ASHRAE outside air flow plant
- LEED ASHRAE 62.1 office area
- Learning Center studies

Bridgestone Warren Facility
9,000 TPD Expansion
Morrison, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

I. C. Thomasson Associates, Inc.
Project Design Management
Mechanical, Electrical, Plumbing and Fire Protection

Thomasson
Industrial Services

Bridgestone Passenger Tire Plant
LaVergne, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

- Extruder Building Modifications
- Curing Press Modifications
- Customer Service Area Modifications
- Sanitary Sewer Modifications
- QCT Trench Modifications
- Roof truss and bracing revisions for A/C Implementation
- PSR Expansion
- Miscellaneous engineering support tasks
- Line L&M Curing Trench Modification from PSR to TBR

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Bridgestone Warren Facility
9,000 TPD Expansion
Morrison, TN

Carpenter Wright Engineers, PLLC
Structural Design and Support

ICT provided project design management including coordination for architectural, civil, structural design subcontractors as well as materials testing engineers. ICT provided mechanical, electrical, and fire protection design, and construction administration for tire production equipment additions.

Manous Design
Architect

- Addition of new rubber extrusion area with structural concrete pit.
- Addition of extension of existing cure press trench and multiple utility pipes for installation of new presses.
- Addition of 1,200 SF of new building to increase production operations.

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Bridgestone PSR Facility
Aiken, SC

- Powerhouse equipment- new facility consulting
- Cable splice guard project
- Boiler--alternatives feasibility project

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Other

- ORR- Cement House process & fire protection
- ORR- Low Voltage Systems
- Banbury addition hydronic system analysis
- Joliette Facility-boiler plant condensate return system

Bridgestone USA
Warren TBR
LaVergne PSR
Wilson PSR

Carpenter Wright Engineers, PLLC
Structural Design and Support

Manous Design
Architect

Wonder Porcelain
Lebanon, TN

Design Innovation Architects
Architect

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

Civil Site Design Group
Site/Civil

Construction Cost
$60,000,000

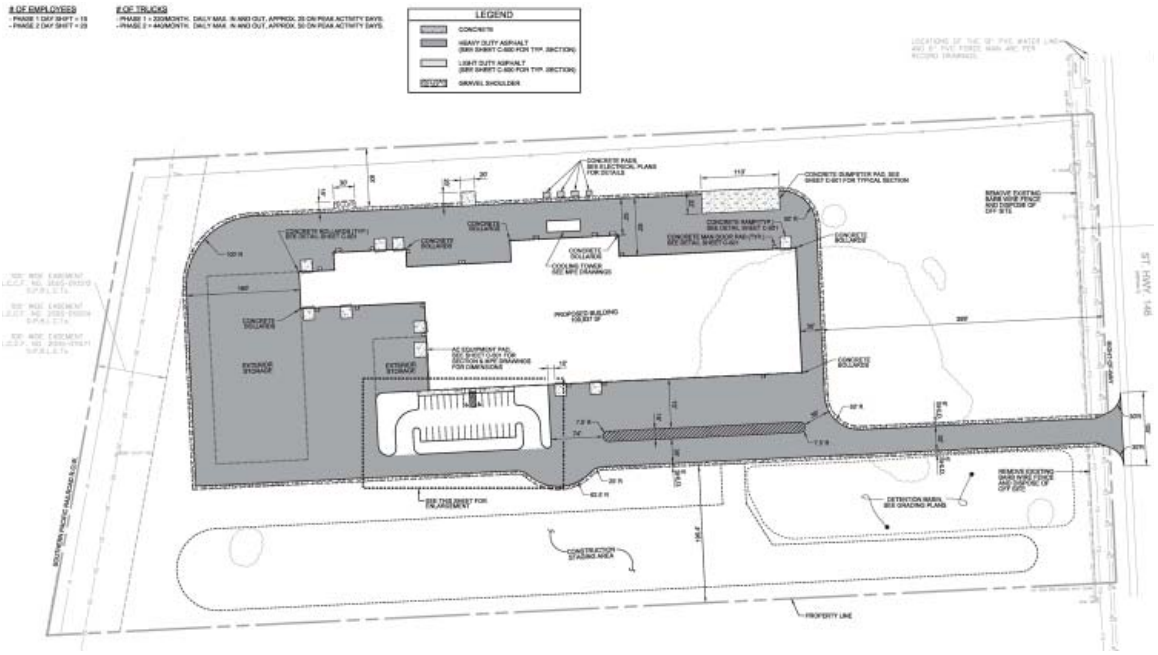
Completion Date
05/2017

Our team (DIA, ICT, CWE and CSDG) provided full planning and design services, including architectural, site/civil, structural, mechanical, electrical, plumbing and fire protection design services for a new 750,000 SF single-story pre-engineered metal building for a tile manufacturing and storage facility.

The project includes the manufacturing plant / warehouse; an office building which includes corporate offices, showroom and R&D facilities.

The Master Plan for the project looked at multiple building configurations and an ultimate planned build-out of potentially 2.25 million SF under roof, on an approximately 150 acre site.

Sumiden Wire Products Corporation
Manufacturing Facility
Dayton, TX



Design Innovation Architects
Architect

I. C. Thomasson Associates, Inc.
Mechanical, Electrical, Plumbing and Fire Protection

Carpenter Wright Engineers
Structural

James + Associates
Site/Civil

The TIS team provided full planning and design services, including architectural, site/civil, structural, mechanical, electrical, plumbing and fire protection design services for a new 115,000 SF light manufacturing (pickling, drawing, stranding of structural wire) and warehouse facility with interior office and employee amenities area. The construction is a Pre-Engineered Metal Building (PEMB) structure.

The project is located on approximately 22 acres and includes paved areas for the Rod Storage Yard (raw materials) and Rod Unloading/ Pickling area, the shipping and receiving dock areas, traffic aisles, new access bridge and road, and employee/visitor parking lot.

Kobalt
Can Manufacturing Facility
Roanoke, VA

I. C. Thomasson Associates, Inc.
Mechanical, Plumbing, Fire Protection and Electrical Design

Carpenter Wright Engineers
Structural

The renovation of an existing 530,000 SF building on an industrial site included improvements for use as a food-grade steel can stamping, manufacturing and warehouse operation.

TIS provided structural, mechanical (HVAC), electrical power and lighting, low-voltage (rough-in) systems, fire protection and piping / plumbing design engineering services.

The structural scope of work included design and construction documents for the new 75,000 SF mezzanine, incorporation of new mezzanine into existing building structure for lateral resistance, localized reinforcement of existing roof structure for new heavy duct and process piping loads, and the process equipment foundations and trenches.

Mechanical work includes HVAC / Plumbing design for office and support areas for comfort air conditioning and heating and ventilation including building pressurization control in manufacturing, hazardous storage, and warehouse areas and containment for tank filling and storage.

Fire Protection work included the design of a sprinkler system for the manufacturing area and palletized storage and a wet pipe foam fire suppression system for hazardous storage.

Electrical work includes upgrade to the site electrical service (working in coordination with the local utility provider), site lighting and interior lighting upgrades, general building power, and power for HVAC equipment.

Post-Design phase services included shop drawings and submittals reviews and construction observation services.

Daltile
Dickson, TN

Manous Design
Architect

I. C. Thomasson Associates, Inc.
Mechanical

Carpenter Wright Engineers
Structural

Architectural, structural, preliminary mechanical and project management services were provided for a new 1.2 million SF porcelain tile manufacturing facility. Six primary functional areas of the facility are raw material storage, body prep and spray drying, glazing, kiln, packing, and warehouse storage.

Team / Individual Experience
Automotive and Related Manufacturing

The TIS team experience includes project expansions for both automotive manufacturing and assembly plants, as well as tier one and tier two suppliers. The similarity for all the projects is they are high volume, quality driven discrete manufacturing companies responding to rapid market shifts on a frequent basis. Planning and design of ancillary spaces such as central energy plants/power houses, pump houses, et al, and administrative/engineering offices, and employee amenity spaces have been included in our team's experience.

Bridgestone Truck and Bus Radial Tire Plant
Morrison, TN

Responsible charge for the structural design of the buildings and equipment foundations for a 1.2 million square foot grass-roots tire manufacturing facility. Design included a 80 foot tall, four-story rubber mixing facility with a floor load of 350 psf, plus a tank farm, rail unloading facility, overhead long-span pipe bridge and a deep, underground concrete utility tunnel.

Bridgestone Truck and Bus Radial Tire Plant
Morrison, TN

Responsible charge for the structural design and support of the buildings and equipment foundations for a 1.2 million square foot grass-roots tire manufacturing facility:

- Tank Farm
- Carbon Black Unloading and Storage Facility
- Plant Services Building
- Banbury Process Building
- Cement House (Concrete package & Equipment foundations)
- Calendering Building (Concrete package & Equipment foundations)
- Creel Building (Concrete package & Equipment foundations)
- Receiving Building (Concrete package)
- Stock Prep Building (Concrete package)
- Tire Assembly Building (Concrete package)
- Curing Building
- Final Inspection Building
- ASRS Building – Automatic Storage and Retrieval System
- Powerhouse Building
- Pumphouse Building
- Process Building and Process Piping Support
- Oil Pumphouse & Oil Storage
- Dust Collection Facility
- Employee Services Building
- Temporary Warehouse for Equipment Staging & Testing

Team / Individual Experience
Automotive and Related Manufacturing

Bridgestone Passenger Tire Plant
LaVergne, TN

Structural design and support for numerous modifications and maintenance needs at the existing plant:

- Extruder Building Modifications
- Curing Press Modifications
- Customer Service Area Modifications
- Sanitary Sewer Modifications
- QCT Trench Modifications
- Roof truss and bracing revisions for A/C Implementation
- Miscellaneous engineering support tasks

Bridgestone PSD
Joliette, Quebec Canada

Conceptual design and evaluation of the feasibility of converting low pressure, vented condensate return systems to high pressure return systems in order to save energy and water consumption. Initial study was performed at the Joliette, Quebec facility for a 90,000 pph boiler system providing steam to six tire curing press lines and various smaller process and HVAC usages.

Bridgestone Tire Manufacturing (USA)
LaVergne, TN

Design for a variety of projects including Banbury (mixer) expansions, pneumatic conveying systems, support steel and platforms for ten new storage silos. Work included quality review of design of a 400-ton chilled water system to provide chilled water to a rubber mixing process (two 200-ton chillers, pumping equipment, piping, controls, electrical power, and construction phase assistance).

Bridgestone Treadline Project
Cuernavaca, Mexico

Engineering design for a new tire tread extrusion line in an existing plant. Work included conceptual line drawings for equipment procurement and detailed machine design for a cement application, four extruder feed hoppers with live rollers, four slab feeders (heavy duty raw material conveyors) and support structures, and four slab skid shifters for staging hoods and exhaust systems associated with the cement applicator system. Drawings and specifications were prepared for millwright installation of the line. Also provided design for utility and process piping, support structures, electrical wiring, conduit, and cable trays, and a pre-purchase specification for a 1500 KVA secondary unit substation to serve the new tread line. Also provided pre-bid services, bid tabulations, and evaluations, opinion of construction costs, and submittal reviews.

Team / Individual Experience
Automotive and Related Manufacturing

Bridgestone Warren
Solar Photovoltaic and Geothermal Systems
Morrison, TN

Conceptual design and evaluation of the feasibility of installing solar photovoltaic cells at The Learning Center of the Bridgestone Warren facility to offset or supplement electrical demand and consumption. Concept included analysis of PV cell installations with and without battery systems, and evaluation of the solar utilization period as compared to the current demand profile and usage of the facility. A second study involved the conceptual design and evaluation of the feasibility of installing a 120 ton geothermal system at The Learning Center of the Bridgestone Warren facility to offset or supplement both electrical and natural gas demand and consumption. Conceptual design involved replacement of the existing 120 ton air-cooled chiller and potential replacement of the existing hot water gas-fired boiler, and constant and variable air volume air handlers, with a geothermal bore field or buried loop system, and water source heat pump air handlers.

Bridgestone Powerhouse Equipment Installations
McMinnville, TN

Provided drawings and specifications for powerhouse equipment installation. Provided hydronic analysis of the central plant and distribution system.

Bridgestone Powerhouse Design Review
Aiken, SC

Review of project design by Giffels Associates, Inc.

Nissan North America, Inc.
Stack Replacement
Smyrna, TN

Design for replacement of three coal-fired boiler stacks at a large automotive manufacturing and assembly facility, due to loss of structural and mechanical integrity because of condensing flue gas corrosion of the existing double-walled metal stacks. Design included refractory-lined replacement stacks of equivalent flue gas flow and draft capacity.

Nissan Tool Rail Fascia Process Drop
Canton, MS

Provided design services for electrical and piping process drops for the fascia injection mold machine at Nissan's Canton, MS facility.

Team / Individual Experience
Automotive and Related Manufacturing

SSPOII
Lead architect for the Service Parts Organization, Phase II. The project entailed nearly 200,000 SF of customized automotive parts distribution and an office and employee amenity complex addition.

Body Fabrication Shop and General Assembly Additions
Lead architect for production area expansions.

GM/Saturn Welcome Center
Spring Hill, TN
Architectural and structural planning and design for renovation and conversion of the historic circa 1929 walking horse barn at the Haynes Haven Plantation to a Visitor's Center for the GM/Saturn manufacturing plant. (Analyzed three options for visitor center including a partial renovation/ addition to the Northfield Office Complex.)

General Motors Saturn Manufacturing Plant
Spring Hill, TN
Structural and civil design and studies for numerous plant expansions and upgrading projects. Projects included:

- 7,000 Ton Press Foundation and Installation
- Service Parts Warehouse Addition - 220,000 square feet
- Body Fabrication Addition - 20,000 square feet
- General Assembly Addition - 10,000 square feet
- Bodysides Addition - 21,000 square feet
- General Assembly Overhead Door Additions
- Body Fabrication Overhead Door Additions
- Study of Elevated Connector Conveyor Relocation
- Study of Pedestrian Walkway Modifications for Deicing
- Air Handling Units Emergency Motor Changeout
- Polymer Tanks Access Platforms
- Bodysides Catwalks Addition
- Truck Marshalling Yard Expansion
- Car Marshalling Yard Redesign
- Hazardous Material Containment Study/Detention Pond Retrofit
- Hoist Rail Addition @ CMM
- Screen Guard Modifications for Conveyor System

General Motors Saturn Manufacturing Plant
Spring Hill, TN
Services included architectural design and construction support for the North and South Gate Houses and a 10,000 SF loss control building in Spring Hill, Tennessee.

DENSO Manufacturing Tennessee, Inc.
Maryville, TN & Athens, TN

Structural design for numerous plant additions, renovations, and modifications for automotive parts manufacturer. Projects include:

- 101 Phase IV Expansion
- 101 Phase V Addition
- 101 – DCM 13 & 14 Foundations
- 101 Crane Additions
- 101- External Air Tank Pads
- 101 Hoist Beam Addition
- 101 Monorail Connection Analysis
- 101-Plating Room Roof Evaluation
- 101-Transformer Support Platforms I thru V
- 102 Crane Additions
- 201 Expansion
- 201 Office Expansion
- 201 Dock Addition
- 201 Print Room & Print Room Expansion
- 202 Wall Modifications
- 202 Production Cooling Tower
- 202 Pump House
- 202 Recycling Center
- 203 Flammables Storage Building
- 203 Pump House
- 500 Cafeteria Addition: E&D Room
- 500 Kitchen/Cafeteria Addition
- 601 Crane Addition
- 601 Fall Protection
- 601 Cooling Tower Replacement
- 601 Press Line Foundation
- 701 Air Handler
- 701 Cooling Tower
- 701 Clean Room
- 801 Phase I
- 801 Phase II
- 801 Dust Collector Foundation
- AFM Phase II
- Athens Fall Arrest System
- Athens Generator Pad
- Nitrogen Tank Foundation
- Switchyard Foundations Retrofit
- Chemical Storage Building
- OSAM Phase IV Expansion

Where We Have Worked

Thomasson Industrial Services

Thomasson
Industrial Services


Integrated Steel Design and Delivery
3D / Building & Process Modeling of Process Equipment
Unique Team Capabilities
In-house Industrial Systems Engineering
Life Safety Code Analysis / Fire Protection

3D / Building & Process Modeling

Building Information Modeling

Software Platforms

- Revit
- CAD Works
- Navis Works

Benefits

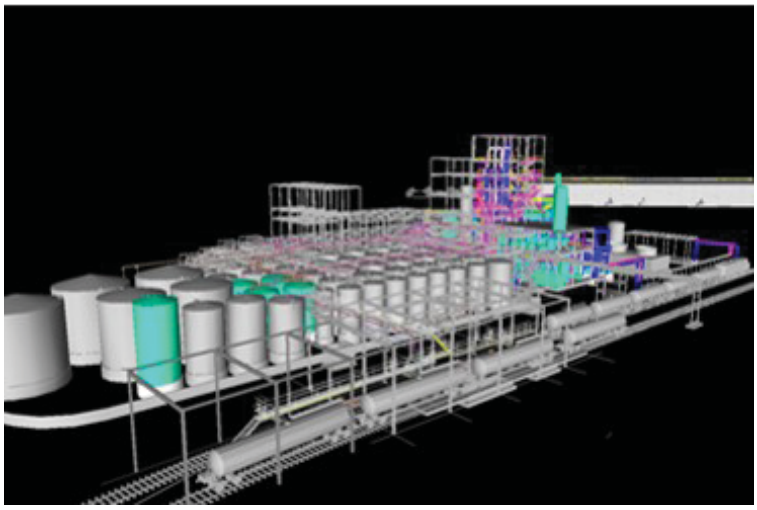
- Coordination
- Clash Detection

Construction Aids

- Spool Piece Drawings
- Bill of Materials

Refinery Expansion

Bunge North America, Decatur, AL



I. C. Thomasson Associates, Inc.

Life Safety Code Analysis / Fire Protection

Life Safety Codes Analysis

Means of Egress

Fire Protection

- Protection Analysis
- Design Management
- Fire Science Human Behavior
- Explosion Protection & Prevention

Thomasson
Industrial Services

Industrial Systems Engineering

Facilities Planning & Layout

Work Cell / Station Design

Automation

Warehouse Optimization

- Racking Design and Layout
- Floor Space Maximization
- Logistics
- Inventory Planning and Capacity Studies

Operations Research & Simulation Modeling

Process Design and Optimization

Preventative Maintenance

Ergonomics & Safety

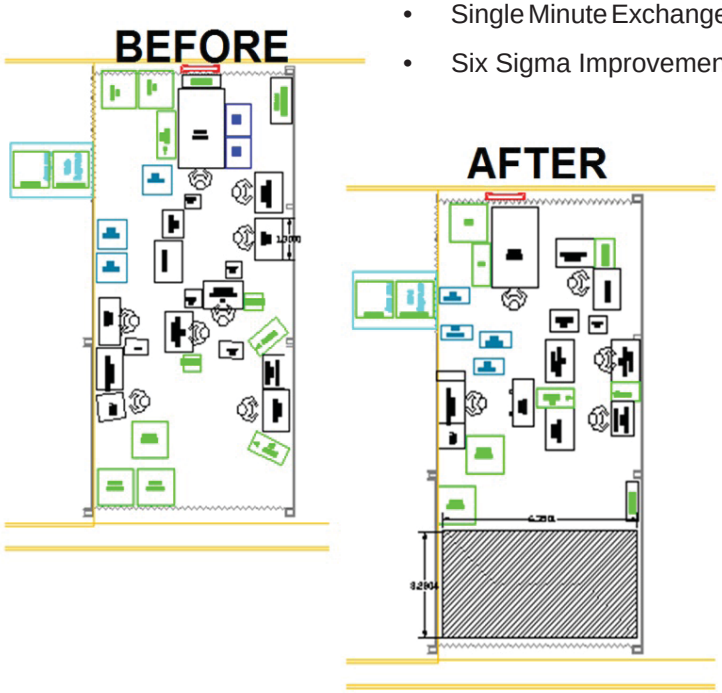
Time Studies / Methods Analysis

Value Added Engineering

Cost / Benefit Analysis

Continuous Improvement

- Cost and Cash Flow Improvements
- Error Proofing (Poke Yoke)
- Just-In-Time Inventory Systems (JIT)
- Lean Construction & Design
- Material Flow Analysis
- Process Improvement
- Model Determination
- Pull Production System (Kanban)
- Single Minute Exchange of Dies
- Six Sigma Improvements



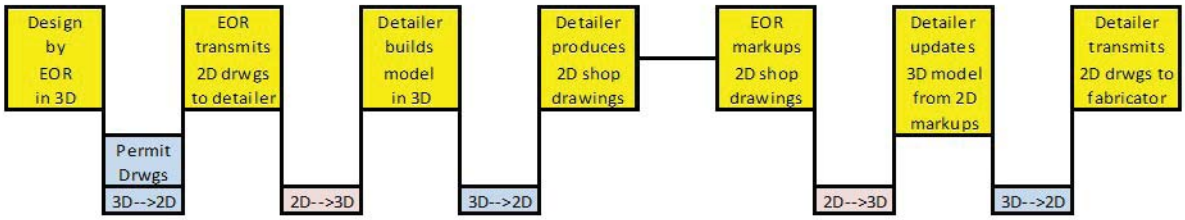
Thomasson
Industrial Services

Integrated Steel Design and Delivery

- CWE builds the 3D BIM model to use in analysis and design of structure.
- As sections of the structure are completed, the BIM model is shared with our steel detailing partner and imported into Tekla Structures.
- Review of steel detailing is expedited using on-screen review available to the entire team (Owner, General Contractors or CM's, Sub-Contractors, Erector, Architect and Engineers).
- Eliminates multiple printings of the 2D drawings for review. Usually only printed for submission for Permit, and final record drawings.
- Connection design for both erection transfer forces and final forces performed by both CWE and detailing partner.
- Erection sheets (E-Sheets) and detail sheets produced by detailing partner are stamped by EOR (CWE), and submitted for permitting.
- Steel detailing services can also include material lists, material tracking, CNC coding, fabrication shop and jobsite observations, and steel brokerage

Flow Chart of 2D/3D Conversions

Conventional Delivery:



Collaborative Delivery: