

NIGEL NIXON AND PARTNERS INC.



Background

- Nigel Nixon and Partners– NNP is an international firm of port advisors who work on a wide variety of projects worldwide.
- **NNP have been established for over forty years** and have built on a reputation as leaders in the field of heavy-duty pavement design. Other expertise extends to market studies, economic analysis, due diligence, planning, design, costing, procurement and implementation.
- In 1994 the company was incorporated in the United States located at its headquarters in Dallas, with representation in U.K., France, Brazil, Caribbean, India and Singapore.
- We are fortunate to secure **repeat business** with many of our clients and have worked with many of them for most of the time we have been in business.



Philosophy

- An Owner's mission values and their stakeholder requirements have been **understood and implemented** on numerous NNP projects.
- NNP as a global consultant focuses its vision on cost effectiveness and cost certain delivery at minimal risk to any Owner.
- Our philosophy and mission is to maximise an Owner's best possible return on their investment by focusing on minimizing Owner risk, establishing a best value project and striving at all times for a cost certain deliverable and optimal solution.
- It is through experience in procuring a truly commercially driven solution led by the project's business plan that NNP would be of great benefit to any potential Owner or Bank.
- Many Project Owners have valued the **commercial approach and philosophy** in project delivery that NNP implements.
- NNP looks to blend its teams wide experience to provide complementary skills to offer a **total integrated service**.





Team Leaders

Nigel Nixon
Chairman

Kris Kapinos
Chief Executive Officer

Admin & finance

Mark Smallridge
President

Mark Smallridge <i>Pavement Lead</i>	Cedric Corbierre <i>Port Planning and Equipment Lead</i>	Keith Abraham <i>Project Director & Owner's Representative</i>	Andrew Griffiths <i>Research & Feasibility Lead</i>	Richard Jennings <i>Operations & Funding Specialist</i>	Rodrigo Paiva
David Fanthorpe <i>Paving and Materials</i>	Theirry Thoubans <i>Port Equipment Engineer</i>	Martin Mannion <i>Project Manager</i>	Andrew Penfold		
Alessandra Simao <i>Design Co-ordinator</i>		Gordon Ginzal <i>Project Manager</i>	Peter Baker		
<i>Civil, Mechanical, Electrical Designers</i>	<i>Port Equipment Designers</i>	Jabir Benhadjtahieb <i>Project Manager</i>			
Pavements & Civil Engineering	Port Planning	Project Implementation	Market Research	Port Acquisition	Port Economics

Key Capabilities |

- Economic Analysis and Fund Representation
- Port Development & Investment
- Port Operations
- Port Procurement & Implementation
- Port Infrastructure
- Port Equipment
- Pavement Design & Appraisal

Key Capabilities |

Economic analysis

- Commercial due diligence
- Feasibility studies
- Investment appraisal
- Traffic forecasting
- Market studies
- Funder representation
- Letter of reliance of authority

Pavement Design & Appraisal

- Pavement rehabilitation
- Condition surveys
- Testing
- Computer analysis & evaluation
- Asset management & maintenance
- Expert witness

Port Development & Investment

- Financing/investment
- Concession/ Lease agreements
- Finance/build/lease
- Equipment and construction procurement
- Site selection

Key Capabilities

Port Equipment

- Equipment planning
- Procurement
- Condition survey
- Maintenance survey
- Refurbishment
- Wire rope cables
- Structural analysis

Port Operations

- Operations due diligence
- Terminal operating system
- Terminal planning
- Dynamic simulation
- Operational layout
- Equipment and HR analyses (OPEX/CAPEX)
- Business planning

Port Infrastructure

- Infrastructure due diligence
- Concept planning
- Back land design
- Yard utilities design
- Yard buildings design
- Detailed design

Port Procurement & Implementation

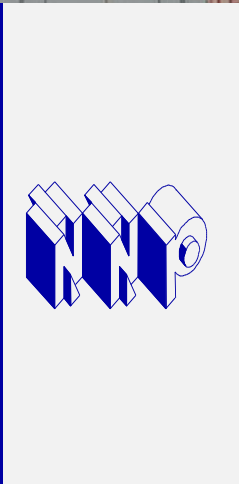
- Construction & project management
- Planning & building consents
- Construction monitoring
- Owner representation
- Cost consultancy

| Project Map





Pavement Design & Appraisal



Experience |

- Berths 5 and 6 at the Barbours Cut Terminal of the Port of Houston are operated by APM Terminals. The pavements at this facility have been constructed in a number of different phases over the past thirty years. The pavements consist of jointed reinforced concrete over lime treated clay subgrade. Over this period the severity of loading from container handling operations has increased and the pavements were exhibiting several signs of distress. Some areas required the use of steel plates and periodic repairs to remain serviceable. Several sections of the pavement had failed prematurely, within a few years of construction. In 2009 Nigel Nixon and Partners, Inc. were appointed as a sub-consultant to Lockwood Andrews and Newnam, Inc. to undertake an investigation into the pavement condition and to develop remedial measures to reinstate the pavements to a serviceable condition.
- For this Maintenance Improvement Project NNP provided teams to undertake a condition survey of the pavements while the terminal remained in operation. This was supplemented by borings and non-destructive testing to assess the residual pavement strength. NNP analyzed traffic loadings, environmental and geotechnical data, and prepared designs, details and specifications for the repairs in the grounded and wheeled yards, and for the circulation roads within the terminal. This three year project also involves regular site visits during construction to agree the remedial areas with the contractor as the pavement continues to degrade. Construction has been undertaken on a rolling program with the contractor only being able to work on limited areas in the terminal. Work is due to be complete by the end of 2011.

Berths 5 & 6 Pavement Rehabilitation- Barbours cut, Port of Houston, Texas, USA



Experience |

- In 2007 the Alabama State Ports Authority and APM Terminals formed a joint venture to construct a new 80 acre container terminal in Mobile. This Capital Improvement Project involved the development of a new terminal with two 1,000ft. berths. The backlands area for the new terminal would be constructed over reclaimed fill of variable quality. The original pavement system considered for the project was full depth asphalt concrete. However, the requirement for the future introduction of RTGs would mean that runway beams would need to be constructed in the pavement to avoid rutting under the channelized wheel loads. APM Terminals hired Han Padron Associates (now Halcrow), to undertake the design work for the terminal buildings and backlands for the terminal. Han Padron Associates subcontracted Nigel Nixon and Partners to assist and advise on all paving issues.
- In addition to assisting with the design of the asphalt concrete pavement, NNP developed preliminary pavement sections for a roller compacted concrete alternative capable of use by RTGs. It involved the design of the pavements for the grounded yard, the empty or wheeled yard and the circulation roadways. NNP analysed traffic loadings, environmental and geotechnical data, and prepared preliminary designs, details and specifications for each pavement option. The successful contractor was required to prepare a final design of the roller compacted concrete pavement for review. NNP reviewed the contractor's proposals that were based upon mix designs produced from locally available materials. Site visits were also undertaken to monitor the pavement construction work. The first phase of construction was completed in 2009.

Mobile Container Terminal, Alabama State Ports, Alabama, USA



Experience |

- To ensure that the Port of Walvis Bay will play a role as a container transshipment hub on the southwest coast of Africa as well as a gateway to land-locked countries, the Namibian Ports Authority (Namport) has launched a new deep water container terminal project at the south end of the port. The terminal will be constructed on reclaimed land connected to the port by a causeway with road and rail links. Following feasibility studies and preliminary design, in 2013, the port sought tenders from a number of international design and build contractors.
- Nigel Nixon and Partners, Inc.'s services included assisting the Port Authority in the selection of a design and build contractor with specific emphasis on the pavements in the terminal access roads, truck gate, maintenance facility and rail yard. We reviewed the design proposals from the three shortlisted contractors and prepared a report on inconsistencies and viability of the alternative approaches. We also participated in the preferred contractor interviews.
- Work on the project is currently ongoing and Nigel Nixon and Partners are reviewing the contractor's design proposals for the filling and pavement work. Pavement systems include asphalt, concrete pavers and reinforced concrete pavement and RTG runways. Settlement of the terminal and related problems are of particular concern owing to the diatomaceous character of some of the underlying and dredge materials.

Walvis Bay Container Terminal Development Project, Walvis Bay, The Republic of Namibia



Experience |

- City of St. Louis Municipal River Terminal is a 27-acre general purpose cargo facility, on the Mississippi River. Containers and other cargo are moved between barges and trucks or rail using a mobile crane. In 2008, flooding of the river causes significant damage to the South Dock, and a subsequent study by the local Development Corporation found that the dock was at the end of its structural life, and that the wharf could fail in the near future. With the aid of an EDA grant, the City is reconstructing the wharf and providing a new aggregate surface for the mobile crane operations. The project is being undertaken on a design and build basis by St Louis Bridge Construction, with ABS Consulting and Halcrow as the engineers.
- Nigel Nixon and Partners prepared the crane pad design for Halcrow. We developed the subgrade properties with the geotechnical consultant and analyzed the loading conditions under the crane tracks to design a geogrid reinforced aggregate crane pad. NNP considered designs for both geogrid and geocell options, with the former being the most cost effective. NNP also prepared the specification for the crane pad construction and reviewed the properties of potential aggregate materials.

South Dock Crane Pad, St. Louis Municipal River Terminal, Missouri, USA



Experience |

- Freightliner redeveloped their intermodal terminal at the Port of Southampton in the United Kingdom in 2004. The terminal used shuttle carriers and reach stackers for container handling operations between the adjacent marine terminal and for loading the containers onto or off of rail cars. The pavement design took maximum advantage of the residual strength of the existing pavements when they were on the same alignment by using them as the base for the new pavements. New pavement was constructed where the two did not coincide. Pavement problems started to develop in a few areas soon after the works had been completed. Following a number of localized surface repairs that did not hold up, Freightliner commenced legal proceedings against the contractor and design consultant. In 2010 Nigel Nixon and Partners, Inc. were appointed to investigate the issues and to provide expert witness services on behalf of the consultant.
- NNP's scope of services included a thorough review of the pavement design and construction records and visiting the facility to undertake an inspection of the pavements and to observe the operations of the shuttle carriers and reach stackers. The scope also included reviewing the results of previous investigations on the failed pavement and underlying subgrade materials to determine the causes of the pavement distress. NNP also undertook an analysis of the loading conditions and carried out a design check of the pavement section. Such designs focused on the likely container handling equipment's dynamic loading at the location of pavement issues. NNP prepared an expert report concluding that the problems were related to construction issues rather than design matters. NNP subsequently participated in mediation proceedings where the case settled.

Freightliner Terminal Investigation, Port of Southampton, United Kingdom



Experience |

- Xiamen Haicang Xinhaida Container Terminals Co Ltd. is developing a new container terminal at the Port of Xiamen in Fujian Province in China, which they will subsequently operate. The terminal is to be operated by electrically powered RTGs operating on reinforced concrete runways in a concrete paver surfaced pavement. The subgrade consists of various fill materials that have been treated with several different techniques to minimize settlement. CMA CGM Group is a major shareholder in this company. The project was designed by the Chinese Design institute. They appointed Nigel Nixon and Partners, Inc. to review the design and construction work for the terminal, and advise on any appropriate work that needed to be performed such that the terminal would meet their requirements.
- For this Capital Improvement Project NNP reviewed the design and appropriate input parameters for compliance with our client's requirements. We established a testing plan for the varying subgrade conditions to verify that the pavement would remain serviceable through the operator's tenure, and advised on remedial measures to deal with residual consolidation potential that could adversely affect the facility. NNP visited the project in 2010 during the construction works and reviewed the quality of the construction and compliance with the design documents. For non-compliant issues we proposed additional testing and remedial measures. Work is ongoing and the project will be completed this year.

Xinhaida Container Terminal, Port of Xiamen, People's Republic of China



Experience |

- Jaxport have developed a new intermodal container transfer facility Port of Jacksonville Fl in USA The terminal is to be operated on RCC surfaced pavement. The subgrade consists of various fill materials that have been treated with several different techniques to minimize settlement. The successful design and build contractor, Dana Kenyon, appointed Nigel Nixon and Partners, Inc. to review the design and construction work for the terminal, and advise on any appropriate work that needed to be performed such that the terminal would meet their requirements.
- For this Capital Improvement Project NNP reviewed the design and appropriate input parameters for compliance with the client's requirements. We established a testing plan for the varying subgrade conditions and the RCC mix design to verify that the pavement would remain serviceable through the operator's tenure, and advised on remedial measures to deal with residual consolidation potential that could adversely affect the facility. NNP visited the project in 2015 during the construction works and reviewed the quality of the construction and compliance with the design documents. For non-compliant issues we proposed additional testing and remedial measures.

Jaxport's New Intermodal Container Transfer Facility, Dames Point, Jacksonville, Florida, USA



Experience |

- Namport are developing a new deep water container terminal at Walvis Bay, Namibia. The terminal is to be operated on Concrete Paver surfaces pavement. The subgrade comprises dredged fill materials that have been treated with several different techniques to minimize settlement. The Port Authority appointed Nigel Nixon and Partners, Inc. to help judicate on the design and build bids, review the design and construction work for the terminal, and advise on any appropriate work that needed to be performed such that the terminal would meet their requirements.
- For this Capital Project NNP reviewed the design and appropriate input parameters for compliance with the client's requirements. We established a testing plan for the varying subgrade conditions and the CBM mix design to verify that the pavement would remain serviceable through the operator's tenure, and advised on remedial design measures to deal with residual differential settlement potential that could adversely affect the facility. NNP visited the project in 2016 during the construction works and reviewed the quality of the construction and compliance with the design documents. For non-compliant issues we proposed additional testing and remedial measures. NNP Inc ran a design Workshop with the Contractor's design team.

Namport's New Deep Water Container Terminal, Walvis Bay, Namibia

PORT OF WALVIS BAY NEW CONTAINER TERMINAL ON RECLAIMED LAND PROJECT
PROJECT STATUS AS AT 9 MARCH 2016



Experience |

- Terminal Link Texas developed a new empty container terminal at Bayport, Houston, Texas, USA. The terminal is operated on a new secure drained RCC surfaced pavement. The subgrade comprises treated fill materials. Terminal Link Texas appointed Nigel Nixon and Partners, Inc. to act as their Owners Representative and designer for a design and build procurement contract.
- NNP also provided onsite supervision, a QA and QC role as well as to ensure that the clients requirements are met. An onsite laboratory for material and soil testing was established and a rigorous testing plan was instigated for the varying subgrade conditions and the CBM mix design to verify that the pavement would remain serviceable through the operator's tenure. The project completed in Summer 2018.

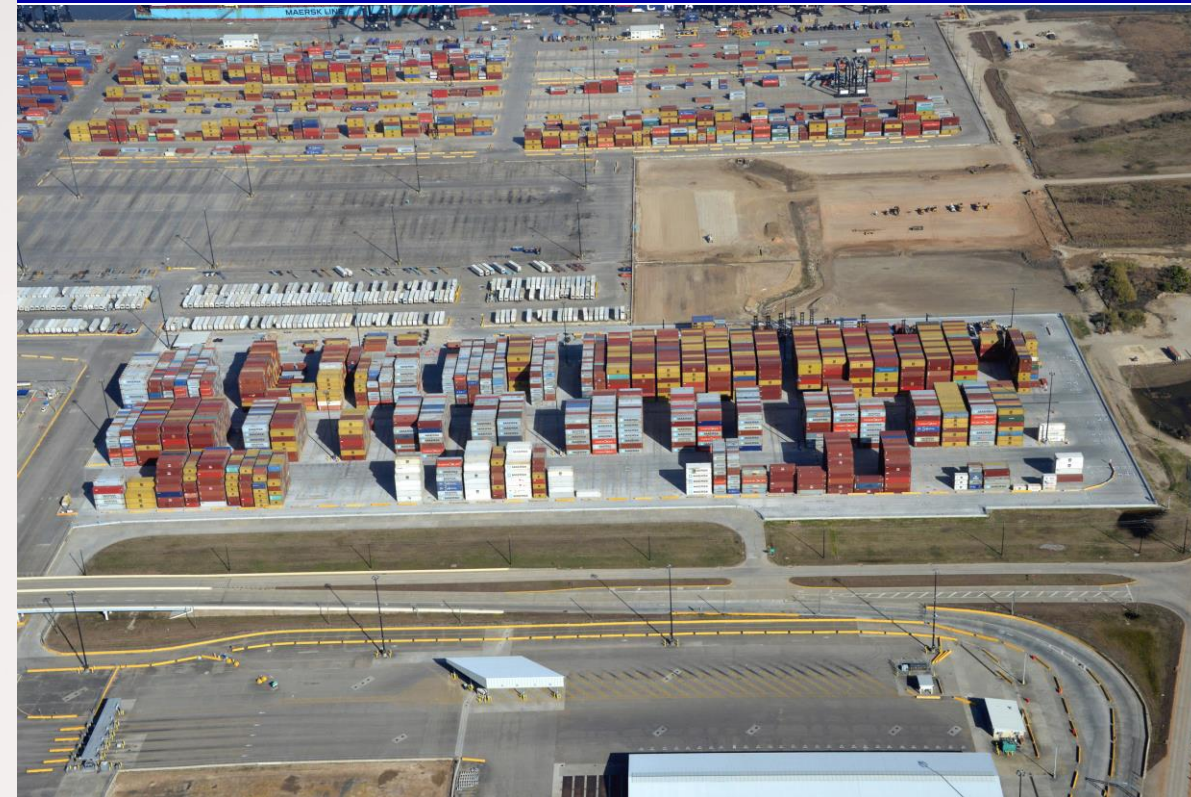
Terminal Link Texas Empty Container Terminal, Bayport, Houston, Texas, USA



Experience |

- Houston Terminal LLC developed a new empty container terminal at Bayport, Houston, Texas, USA. The terminal is operated on a new secure drained RCC surfaced pavement. The subgrade comprises treated fill materials. Houston Terminal appointed Nigel Nixon and Partners, Inc. to act as their Owners Representative and designer for a design and build procurement contract.
- NNP also provided onsite supervision, a QA and QC role as well as to ensure that the clients requirements are met. An onsite laboratory for material and soil testing was established and a rigorous testing plan was instigated for the varying subgrade conditions and the CBM mix design to verify that the pavement would remain serviceable through the operator's tenure. The project completed in December 2020.

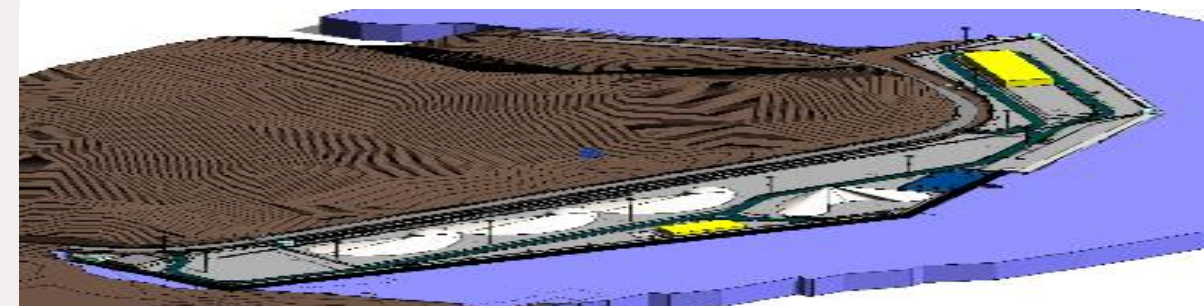
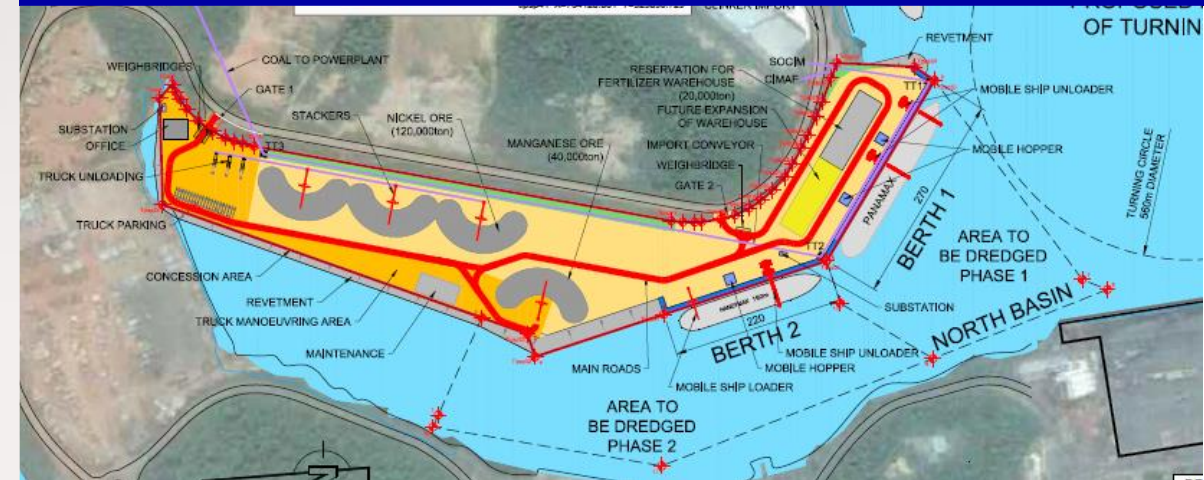
Houston Terminal LLC Empty Container Terminal, Bayport, Houston, Texas, USA



Experience |

- NGE a French Civil Works contractor was participating in the as bidder in the Design & Build of a Dry Bulk Cargo Terminal in San Pedro Ivory Coast
- NGE requested NNP to develop the Concept Design for the all the surface platform from paving design, MEP works design including surface rainwater drainage, wastewater network design, lighting, electrical MV & LV network design, CCTV.
- NNP developed preliminary pavement sections for a roller compacted concrete alternative capable of use. It involved the design of the pavements for the grounded yard, the empty or wheeled yard and the circulation roadways. NNP analyzed traffic loadings, environmental and geotechnical data, and prepared preliminary designs, details and specifications for each pavement option.
- Services included also LOD350 BIM Model of the infrastructure allowing NGE easy quantity take-off of the materials, excavation & reclaiming volumes.

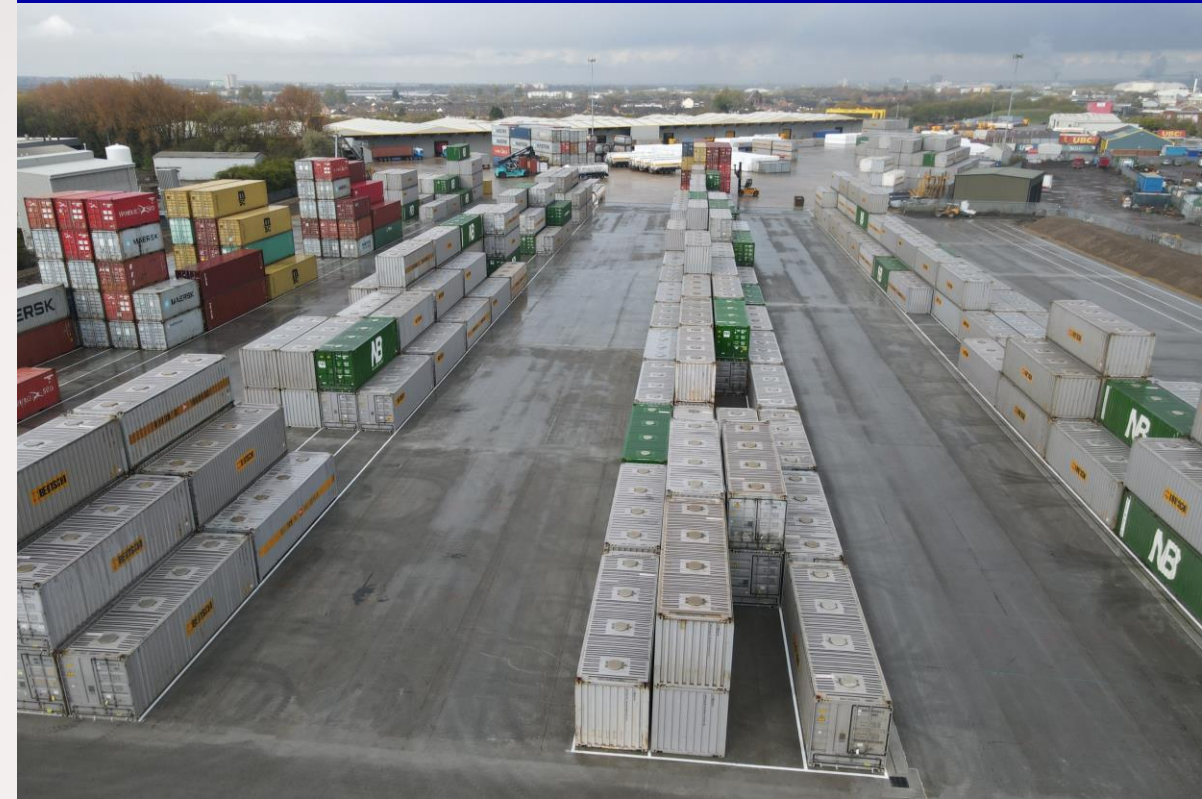
San Pedro Dry Bulk Cargo Terminal - Conceptual Design San Pedro - Ivory Coast



Experience | Paving Design

- NNP were responsible for the design of a new RCC pavement. The project comprised the development of 11,000 m² concrete yard extension for the storage of containers. The site was located adjacent to the existing Bertschi yard on a brown field site which had previously been used for storage of materials and empty containers.
- The scheme included the design of a Roller Compacted Concrete yard and a lime and cement stabilised grade surface. The use of RCC and ground stabilisation removed a significant volume of material import and export and reduced vehicle movements during construction. Existing concrete foundations and sections of hardstanding were crushed to provide material for the pavement foundation. The yard was designed to tight tolerances to allow the safe stacking of containers while providing adequate surface water drainage. The drainage network included heavy duty slot drains to maximise upstream storage and was designed to attenuate the surface water from the new yard requiring the design of 900m³ balancing pond and a pumping station to the existing outfall.
- Despite the challenges of a sloping site with variable ground conditions and existing concrete foundations, levels to the existing yard had to match. The use of RCC removed the need for reinforcement, reduced joints and allowed early access for the user as well as having significant environmental advantages.

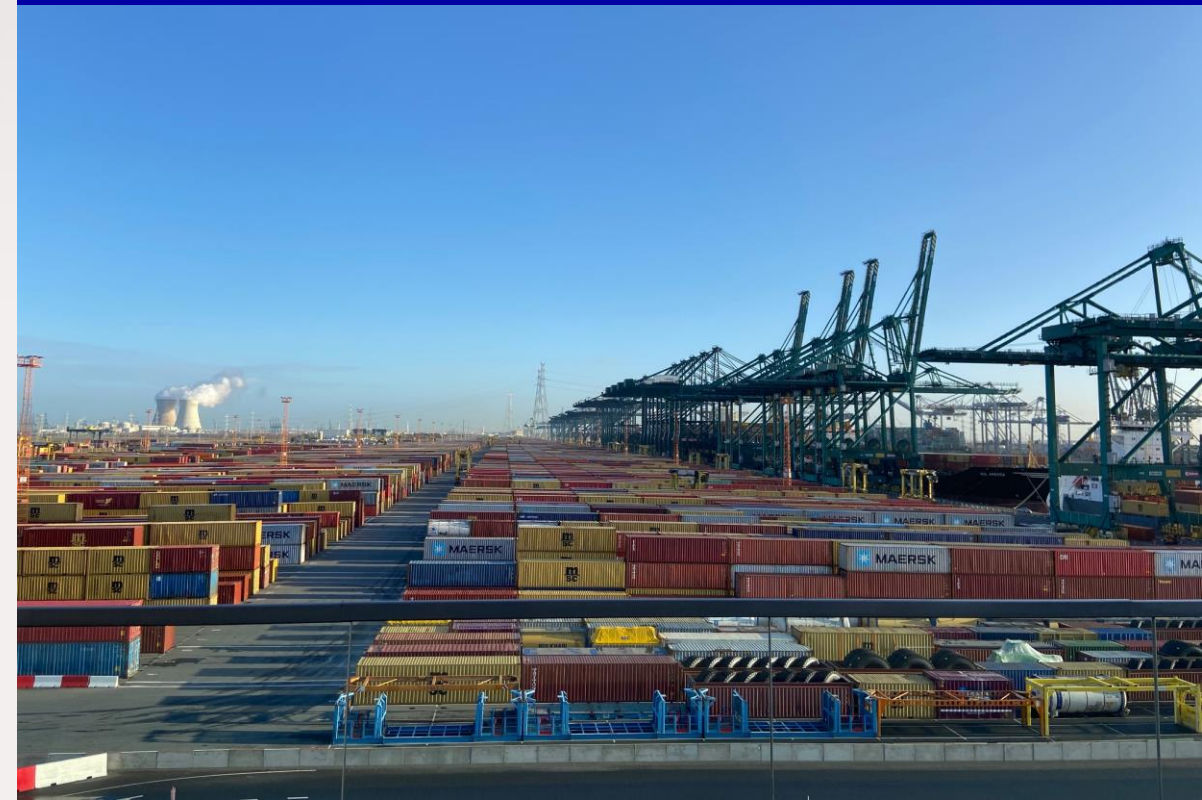
Bertschi Teeside, UK New Inland Container Terminal



Experience |

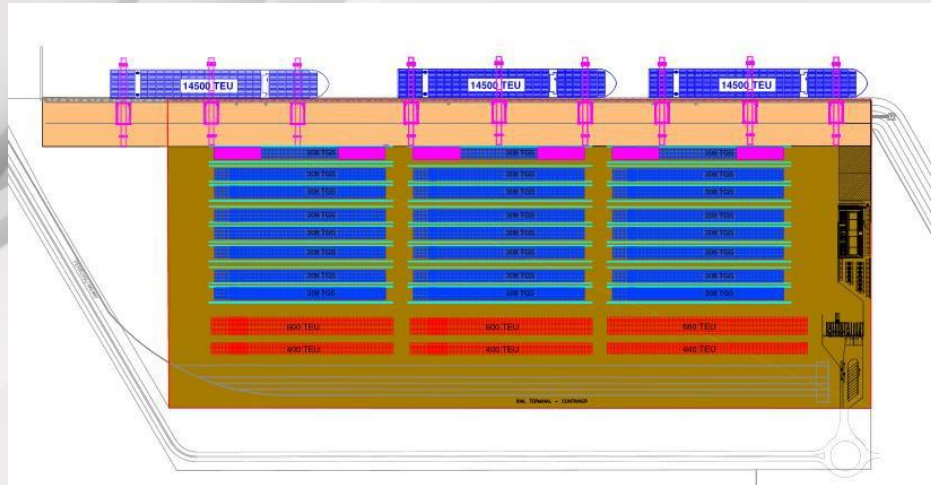
- Full forensic investigations into the cause of the premature failure of the terminal in the largest container terminal in Europe.
- NNP also prepared specifications, costings, calculations drawings and design methodology for the recommended repairs. Also provided support during the procurement of those repairs and ensuing supervision.

MSC PSA European Terminal Antwerp - Belgium



Experience |

- Terminal Link is investigating the opportunity of developing a new container terminal in Brazil. The project would be a container terminal with 1400 m quay length and 76 ha of yard area.
- Terminal Link have appointed Nigel Nixon and Partners, Inc. to act as their designer for a Preliminary Functional Analysis (Berth, Yard, Gates, Equipment) and a Preliminary Conceptual Design (Pavement, Fencing, gates, Buildings, Electricity, CCTV, Hydraulic, IT system, Terminal Equipment, CAPEX> 300 MUSD)

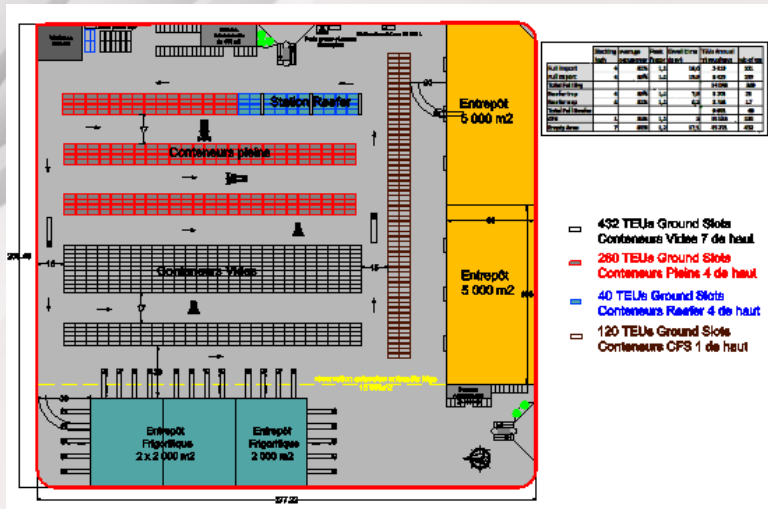


Terminal Link- CMA CGM, Container Terminal, Brazil



Experience

- CCIS is looking the opportunity of developing a logistic zone and a container terminal in Africa: yard area : 6,5 ha, Reefer Warehouses: 3x 2 000 m², Warehouse: 2 x 5 000 m²
- CCIS have appointed Nigel Nixon and Partners, Inc. to act as their designer for a Preliminary Functional Analysis (Berth, Yard, Gates, Equipment) and a Preliminary Conceptual Design (Pavement, Fencing, gates, Buildings, Electricity, CCTV, Hydraulic, IT system, Terminal Equipment, CAPEX> 15 MUSD)



CC Inland Service- CMA CGM, Dry Port, Africa



1. We firmly believe in Design Build, too many consultants pay lip service to it, but it fits with our ethos of providing the owner with cost certain delivery.

5. We have a pragmatic and proactive approach to problem solving.

Why NNP?

2. We have a breadth and depth of experience that few will equal, we have hugely experienced people, who have delivered projects globally.

4. Our focus is always on minimizing the Owner's risk profile in the most cost efficient way and maximizing the best financial outturn for the project.

3. We know how to write Owner's Requirements, the skill is to transfer risk from the Owner to the Contractor while maintaining the quality in the product .

6. We have a true understanding of best value, with cheapest not always best and value decisions have to involve the Owner and should never just be about cutting cost.

Why NNP?

7. We pride ourselves on the ability to accurately cost plan, an essential skill when making decisions early in the process.

8. We are excellent team builders, identifying the right people for the job, developing an environment of mutual trust and respect amongst fellow professionals, valuing the contribution of each team member.

9. We encourage innovation and creativity from the team to think “outside the box” and not be constrained by normal rules or national boundaries.

10. Our experience of working for Owners and Contractors provides the ability to be fair in judgement of conflict, promoting a no blame, no excuses culture.

11. NNP were the authors of the original British Ports' Association's Heavy Duty Pavement Manual, and related personnel continue with the company.

15. NNP have worked for manufacturers of heavy lift equipment in determining the damaging effect of various wheel configurations and dynamic loading.

Why NNP?

12. NNP's personnel were involved in PIANC's publication on Design and Maintenance of Container Terminal Pavements, and are working on the subsequent publication Design, Maintenance And Sustainability Of Container Terminal Pavements

14. NNP have undertaken investigation of many failed pavement to determine the cause or causes of the failures, and have a thorough understanding of what can go wrong and how to avoid such problems.

13. NNP have undertaken the analysis and specification of numerous port pavements around the world, using standard and innovative pavement materials.