

## MCKAY PROJECTS



## SELECTED STS CRANE PROJECTS

User/Client Name Project Location	Start Year	Crane Supplier and Crane Type (Twin-20' STS, unless noted)	Number of Cranes	Services Provided						
				Technical Specifications	Design Assistance	Design Review	QA/QC Audit & Mfg. Review	Assembly / Shipping Review	Testing / Acceptance Review	Contract Management
Confidential	2021	SANY	5			✓	✓			
STI Chile San Antonio, Chile	2020	ZPMC	2	✓						
Maher Terminals Elizabeth, New Jersey	2020	Liebherr	3	✓		✓				
Confidential	2020	ZPMC	2	✓	✓	✓	✓	✓	✓	
Confidential	2019	HSHI	4		✓	✓	✓	✓	✓	
Everport Terminal Services Los Angeles, California & Kaohsiung, Taiwan	2019	ZPMC	1	✓		✓				
Everport Terminal Services Oakland, California	2019	ZPMC	1	✓		✓				
APM Terminals Crane & Engineering Services/Abu Dhabi Terminals, Khalifa Port	2018	ZPMC	10			✓	✓			
Eagle Marine Services Los Angeles, California	2018	ZPMC	4	✓ Review		✓	✓	✓		
Virginia Port Authority Portsmouth, Virginia	2018	ZPMC	4				✓	✓	✓	
Northwest Seaport Alliance Tacoma, Washington	2018	ZPMC	4	✓		✓	✓	✓	✓	✓
Confidential Florida	2018	ZPMC	3+	✓	✓	✓	✓	✓	✓	
Confidential Massachusetts	2018	ZPMC	3	✓	✓	✓	✓	✓	✓	
Freeport Container Port Freeport, Grand Bahama	2017	ZPMC	3			✓	✓	✓		
SPRC + CONTECAR Cartagena, Colombia	2016	ZPMC	2+4			✓	✓	✓	✓	
Hongkong Int'l. Terminals Hong Kong	2016	SANY	1		✓	✓	✓	✓		

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DP World Prince Rupert, BC, Canada	2016	ZPMC	3			✓	✓	✓		
Modern Terminals, T1 & T2 Hong Kong	2016	ZPMC	5			✓	✓	✓		
DP World, Centerm Vancouver, BC, Canada	2015	ZPMC	1	✓ Review		✓	✓	✓		
Port of Tacoma Tacoma, Washington	2015	ZPMC	4	✓		✓	✓	✓	✓	✓
Yantian Int'l. Container Terminal, Phase 3 Shenzhen, China	2015	ZPMC 4 Conventional 3 Truss boom	4		✓	✓	✓			
West Basin Container Terminal Los Angeles, California	2014	ZPMC	2	✓		✓		✓		
SPRC + CONTECAR Cartagena, Colombia	2014	ZPMC	2+3			✓	✓	✓	✓	
SSA Manzanillo Manzanillo, Mexico	2014	ZPMC	2	✓		✓		✓		
San Antonio Terminal Int'l. San Antonio, Chile	2014	ZPMC	2	✓		✓		✓		
Manzanillo Int'l. Terminal Panama	2014	ZPMC	4	✓		✓	✓	✓		
Maher Terminals Elizabeth, New Jersey	2014	Liebherr	2	✓		✓				
Port Authority of Altamira Mexico	2014	ZPMC	2		✓	✓		✓		
TransHoist, Port of Gulfport Gulfport, Mississippi	2014	ZPMC	3	✓		✓	✓	✓	✓	
SSA, Tuxpan Port Veracruz, Mexico	2014	ZPMC	4	✓		✓	✓			
Evergreen Kaohsiung, Taiwan	2013	ZPMC	5	✓		✓	✓	✓		
Evergreen Los Angeles, California	2013	ZPMC	3	✓		✓	✓	✓		

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JACT 1, Jebel Ali UAE	2013	TGPC	4			✓	✓			
Port Tanjung Pelepas Malaysia	2012	ZPMC	8			✓				
JACT 3, Jebel Ali UAE	2012	TGPC	10			✓	✓			
JACT 3, Jebel Ali UAE	2012	ZPMC	9			✓				
APMT Rotterdam, The Netherlands	2012	Kalmar	10			✓				
LSCT La Spezia, Italy	2013	OMG	2		✓	✓				
Rotterdam World Gateway The Netherlands	2012	ZPMC – Dual Trolley, Tandem 40' Lift	11			✓	✓	✓		
Port of Houston Authority Bayport Terminal, Texas	2012	Konecranes	4	✓						






## SELECTED MISCELLANEOUS PROJECTS

User/Client Name Project Location	Start Year	Project Type	Number of Cranes	Services Provided						
				Technical Specifications	Design Assistance	Design Review	QA/QC Audit & Mfg. Review	Assembly / Shipping Review	Testing / Acceptance Review	Contract Management
Port of Long Beach, California Pier G	2022	Bulk Shiploader	1	✓		✓				
Port of Long Beach, California Pier F	2020	Shiploader Assessment							✓	
APMT Los Angeles, California	2020	RTG Workshop		✓	✓					
Massport Boston, Massachusetts	2020	RTG	4			✓	✓		✓	
Anchor QEA Channel Islands, California	2019	New Wharf Build		✓	✓	✓	✓			
Confidential	2017	Bridge Crane	1	✓		✓	✓			
Long Beach Container Terminal Long Beach, California	2015	IYC and ASC	5/74	✓		✓				
SSA Marine Stockton, California	2014	Triple Spreader	1	✓	✓	✓	✓		✓	
APMT Rotterdam, Netherlands	2013	ARMG	26			✓				
MFT and SFT Melbourne and Sydney, Australia	2013	ARMG	7			✓	✓			
Confidential	2010	Grab Bucket Unloader	1	✓	✓	✓	✓		✓	
Bigge Power Constructors San Leandro, California	2008	Revolving Derrick Crawler Crane	1		✓	✓				
American Bridge San Francisco, California	2007	Left Coast Lifter	1	✓	✓	✓	✓	✓	✓	

Photograph	Description
(Photograph not available)	<p>STS Crane Procurement PSA, Singapore</p> <p>PSA purchased five STS cranes from SANY for their MSC Asia Terminal in Singapore. PSA retained McKay and Liftech to provide design review support to PSA's procurement team. McKay provided a cursory review to assure quality design.</p>
	<p>STS Crane Procurement Abu Dhabi Terminals, Khalifa</p> <p>ADT purchased 5+5 STS cranes from ZPMC for their Khalifa terminal in Abu Dhabi. ADT retained Liftech and McKay to provide design review and commissioning support to their procurement team. McKay provided a scaled review and conducted a site visit at ZPMC's facility to observe progress and workmanship, and support ADT's full-time inspection team through their Functional Acceptance Testing program.</p>
	<p>Tuas Double Trolley STS Crane Procurement Port of Singapore Authority Tuas Terminal, Singapore</p> <p>PSA purchased dual trolley STS cranes from ZPMC for their new Tuas Terminal development in Singapore. PSA retained Liftech and McKay to provide design review support. McKay provided an extensive review and calculation package.</p>
	<p>Massport Low Profile Crane Procurement Conley Terminal, Boston, Massachusetts</p> <p>Massport's container terminal underwent a multi-phase rehabilitation, including a berth extension and container crane procurement for three low profile shuttling boom STS cranes. McKay developed the crane specifications, performed the design review, and provided construction and commissioning support through to crane acceptance.</p>

(Photograph not available)	<p>STS Crane Procurement Sociedad Portuaria Regional de Cartagena Cartagena, Colombia</p> <p>SPRC purchased STS cranes from ZPMC. SPRC retained McKay and Liftech to provide review of the design, review of fabrication, and on-site commissioning support.</p>
	<p>STS Crane Modifications Matson Terminals, Honolulu, Hawaii</p> <p>McKay was retained by Liftech as the mechanical consultant to provide the complete specifications and design for the conversion of the cranes to cable-reel power. The existing wharf structure necessitated the location of the trench on the landside rail, presenting unique challenges for mounting the cable reel and the cable path. Additionally, the retrofitted reels were also to match those of the new incoming cranes.</p>
	<p>STS Crane Procurement Port of Gulfport, Mississippi</p> <p>Mississippi State Port Authority at Gulfport purchased three STS cranes from ZPMC. TransHoist was retained by Neel-Schaffer to provide services for writing the construction specifications, mechanical and electrical design review services, as-built documentation services, manufacturing review, and commissioning and acceptance testing support.</p>
	<p>STS Crane Raise/Extend Modification APM Terminals, Los Angeles, CA</p> <p>In the design phase, McKay was retained by Liftech to provide services for writing the construction specifications, as well as providing design review services to assess the modification drawing package and calculation package. McKay's experience with the complete raise/extend modification scope of work, as well as developing bid packages for potential contractors has benefitted the project, helping the client to accelerate the pace of the project.</p> <p>Upon completion, these APM cranes will be among the world's largest, capable of servicing the biggest container ships.</p>

	<p><b>Low Profile Crane Procurement</b> Port Everglades Department of Broward County Fort Lauderdale, Florida</p> <p>PED purchased 3 + 2 low profile shuttling boom STS cranes from ZPMC. McKay developed the crane specifications, performed the design review, and provided construction and commissioning support through to crane acceptance.</p>
	<p><b>STS Crane Raise</b> APL, Los Angeles, California</p> <p>APL retained Liftech and McKay to provide specifications and designs to modify the structural, mechanical, and electrical systems for the crane raise. McKay developed unique solutions to maximize the new lifting height, including drum modifications to fit additional hoist rope. As the raised cranes are now heavier and have additional wind area, McKay also reviewed the gantry machinery to confirm the crane's suitability for the new accelerating and braking loads.</p>
	<p><b>Electrical Power Demand Study</b> Port Newark Container Terminal, New Jersey</p> <p>PNCT expanded their container crane capabilities with a series of STS procurements, bringing their total STS fleet to 14. PNCT retained Liftech/McKay through the prime consultant CH2M Hill to conduct a study of anticipated electrical demand. McKay conducted a comprehensive analysis of expected power demand. The parameters included: empirical data from existing cranes, establishing crane diversity factors, evaluation of expected crane cycle times and container weights, and power quality.</p> <p>With the power study, PNCT can prepare their electrical infrastructure for additional cranes.</p>



	<p>STS Crane Procurement Port of Tacoma, Washington</p> <p>Port of Tacoma purchased 2 + 2 STS cranes from ZPMC. TransHoist was retained to provide engineering services to Port of Tacoma. TransHoist performed an in-depth review of all mechanical and electrical designs, provided construction and commissioning support, and assisted with acceptance testing.</p>
	<p>STS Crane Relocation and Rehabilitation Boston, Massachusetts</p> <p>Massport negotiated a purchase arrangement with the Port of Oakland for two of their Kocks low profile cranes. After several years of operation, the cranes underwent a major rehabilitation effort to resolve reliability and nuisance issues. McKay was retained as the port's engineer and project manager for the duration of the relocation and rehabilitation projects. From authoring the technical specifications and commercial bid package, to reviewing submittals and managing the project schedule, McKay worked closely with all parties, including the general and sub-contractors, component suppliers, and regulatory authorities to achieve success for Massport.</p>
	<p>STS Crane Boom Extension Terminales Rio de la Plata, Buenos Aires, Argentina</p> <p>TRP retained Liftech &amp; McKay to provide the design engineering package to extend the booms on their cranes. Liftech designed the structural modifications including the boom insert section, forestay insert section, and additional bracing. McKay evaluated and provided solutions for the modifications on the crane's machinery, mechanical and electrical components, including increased loads in the boom and gantry. Working closely with TRP, and the modification contractor, the cranes were successfully modified and promptly returned to service larger vessels.</p>



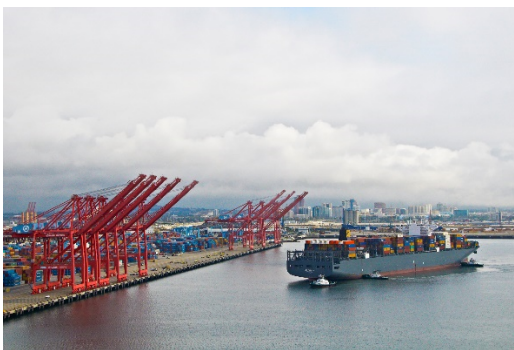
### STS Crane Procurement Dubai Ports World, Jebel Ali UAE

For their new Terminal 3, DPW placed one of the largest quantity container crane orders on record: 19 ship-to-shore cranes and 50 automated stacking cranes. DPW retained Liftech and TransHoist to perform the design review of the cranes from both manufacturers. The unique aspects of this project included STS cranes that are among the largest in the world, ability to handle tandem 40 foot containers, and automation features.



### STS Crane Procurement and Crane Raise Total Terminals International, Long Beach, California

To accommodate larger vessels, TTI purchased two STS cranes from ZPMC and raised ten STS cranes purchased from the Port of Long Beach by 32 feet. McKay was retained to provide specifications, a thorough design review, construction management, and delivery oversight for the ZPMC STS crane procurement. For the crane raise, McKay provided construction documents and bid support, design and submittal review, and construction support.



### STS Crane Raise and Extend Pier T, Port of Long Beach, Long Beach, California

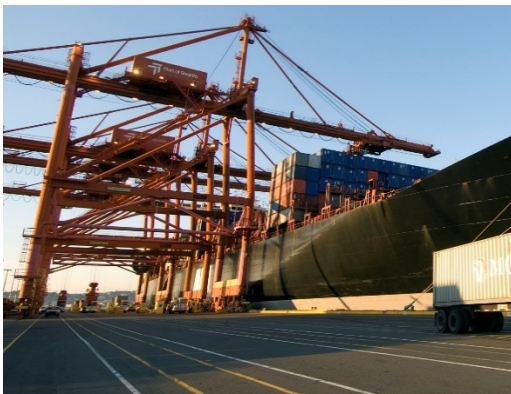
With the trickling down of the largest vessels to US ports-of-call now a reality, the Port of Long Beach is preparing to raise and extend their largest fleet of 14 cranes at Pier T. McKay and Liftech provided the complete consulting services for the original procurements, assuring at the time the cranes were pre-designed to accommodate dimensional upgrades.

With much of the design work previously accomplished, McKay/Liftech provided POLB with a solution that expedites the upgrading process. McKay/Liftech worked with POLB developing a strategic plan to accomplish the remainder of the work, including sufficient raise and extending parameters, and associated structural, mechanical, and electrical scope items.



**STS Crane Procurement  
Rotterdam World Gateway  
Maasvlakte 2, Rotterdam**

RWG purchased 14 STS cranes from ZPMC. The cranes are dual trolley, utilizing a transfer platform on the sill beam to transfer containers between the primary and secondary trolleys. Additionally, RWG purchased 69 automated guided vehicles (AGVs) and 32 automated stacking cranes (ASCs). RWG retained TransHoist to provide engineering services for three procurements: STS cranes, AGVs, and a procurement of barge-mounted container cranes. TransHoist reviewed all mechanical and electrical designs and provided on-site manufacturing review at the manufacturers' facilities.



**STS Crane Raise and Extend  
APL, Port of Seattle, Washington**

APL retained Liftech and McKay to conduct a feasibility study to understand the scope of modifications required. McKay analyzed the mechanical systems of the cranes including the reeving and machinery for the hoist, trolley, and boom. A critical conclusion was reached that the weight and length of the trolley could be reduced by eliminating the separating sheave machinery. This reduced gantry wheel loads and allowed a shortening of the trolley, effectively adding outreach without further lengthening the boom.



**STS Crane Procurement  
Orient Overseas Container Line  
Port of Long Beach, California**

OOCL purchased 14 ZPMC fully-automated cranes with dual-hoist tandem capability on the shore trolley and a transfer platform with a secondary trolley for landside handling. OOCL additionally purchased 74 automated stacking cranes (ASCs) and five intermodal yard cranes (IYCs). LBCT retained TransHoist through Moffatt & Nichol to provide the technical specifications and design review services for the STS, ASC, and IYC crane procurements.

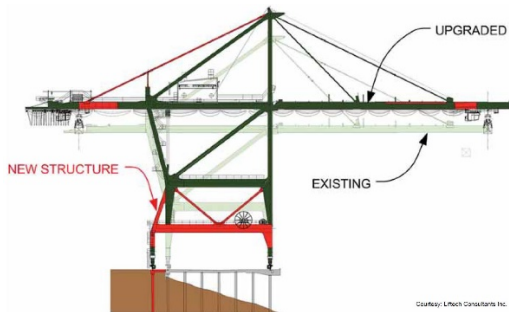




### STS Crane Raise & Extend Maryland Port Administration Baltimore, Maryland

As a sub-consultant to Liftech, McKay co-authored the modification specifications for IHI and IMPSA cranes at Dundalk terminal and developed the mechanical design concepts to confirm the feasibility of the increased lift and outreach. McKay produced drawings for modifying the boom reeving, including relocating and adding sheaves and modifying the existing hoist, trolley, and boom drums for additional capacity.

MPA is using the specification and concept drawings to collect budgetary pricing estimates for the modifications.



### STS Crane Raise and Extend Europe Container Terminals Rotterdam, The Netherlands

In preparation for calls of larger vessels in the near future, ECT sees the benefits of upgrading their existing cranes relocated from another site. Compared with purchasing a new fleet, upgrading will offer lower capital costs and an improved project timetable.

ECT retained the team of Liftech and McKay to provide a comprehensive structural and mechanical study of their existing cranes relocated from another site for upgrade. With the primary goal of increasing crane dimensions, the team developed structural assemblies to accommodate the longer outreach and backreach, lift height, and gantry rail gage change. The team provided solutions for all primary mechanical areas including rope drum capacity, boom reeving changes, and complementary systems such as stairways, elevator, cabling, and gantry machinery arrangements.

With an efficient modification plan in place, ECT is better prepared to assess whether it is most beneficial for their terminal to buy or modify.



**STS Crane Rehabilitation**  
Massachusetts Port Authority  
Boston, Massachusetts

Massport operates under the runway path of a nearby airport, necessitating an STS fleet of low profile cranes. The crane DC drives were proving unreliable and difficult to support, so the crane drives were upgraded to modern AC power. McKay's involvement spanned the length of the rehabilitation project including site compatibility evaluation, on-site pre-purchase condition assessment, and re-commissioning. When Massport decided to upgrade and repower the four Paceco cranes, McKay was retained to develop cost and schedule estimates, write the specification, conduct the design review, and provide startup/commissioning services.

McKay worked closely with Massport to develop the best solutions for their operations.



**Tandem 40 Design and Procurement**  
PSA, Singapore

PSA Singapore sought expansion of its large fleet of STS cranes with an order for 14 ZPMC dual-hoist tandem (DHT) 40 cranes. The cranes feature 80 tonne hoist capacity.

McKay acted as the lead mechanical engineering consultant to PSA throughout the procurement. McKay has a strong history in the development of the DHT cranes, particularly with ZPMC. McKay worked closely with PSA and ZPMC throughout the specification, award, design, and testing phases to resolve critical issues.

McKay developed a rigorous crane testing procedure to validate the complex integration between hardware and software.



### STS Container Crane Procurement Maher Terminals, Prince Rupert, BC, Canada, and Elizabeth, New Jersey, USA

As part of their expansion plan, Maher has had several consecutive procurements for their growing terminals in British Columbia, Canada, and Elizabeth, New Jersey, USA. McKay's involvement includes the design reviews for each crane design, on-site manufacturing reviews, and execution of the testing and acceptance procedures.

Since the procurements span over several years, McKay worked closely with ZPMC to deliver consistency in the design and manufacturing of the cranes. Utilizing cranes of a shared overall design, Maher will benefit from a lower total cost of ownership.





### Tandem 40 Design and Procurement Yantian Port, Dapeng Bay



Seeking to expand its terminal capability, YICT purchased eight tandem 40 container cranes from ZPMC. The cranes feature an 80 t hoist capacity and rank among highest throughput capability in the world.


McKay was retained as a prime consultant by YICT for the mechanical engineering services pertaining to procurement: specification, pre-bid, award, design, design review, site and manufacturing review, and acceptance. McKay worked closely with YICT and ZPMC on the development of the hardware for reliable tandem 40 operation, including key areas such as headblock coupling and stowage.



McKay developed a rigorous crane testing procedure to validate the complex integration between hardware and software.

Photograph	Description
	<p><b>Bulk Shiploader Condition Survey</b></p> <p>This bulk shiploader was built and placed into service circa 1977 in Long Beach, California, primarily handling carbon. The owner requested a condition evaluation and cost assessment, with the intent to conduct a cost/benefit comparison to rehabilitate the equipment or procure a replacement.</p> <p>McKay and Liftech performed comprehensive visual assessment to document the mechanical, electrical, and structural condition, and furnished a report detailing the findings. Our review included an explanation of findings, a punch list and associated budgetary cost breakdown, and timeline for rehabilitation. We also furnished a detailed analysis of the alternative approach to replace the unloader including replacement cost, timeline, and subjective factors affecting the decision.</p> <p>Owner: City of Long Beach</p>
	<p><b>Grab Bucket Unloader</b></p> <p>As part of their complete facility upgrade program, the owner sought to increase their dockside unloading capacity with an additional grab bucket unloader.</p> <p>Upon delivery and startup of the unloader, the owner retained McKay to provide ongoing engineering services. McKay worked closely with the owner and operator to manage and resolve technical issues, improving reliability and increasing unloader availability.</p> <p>With the goal of improving throughput into the plant, McKay conducted cycle time studies and simulations to evaluate handling rates. From these studies, McKay developed mechanical and PLC software solutions to increase efficiency and value for the customer.</p> <p>Owner: Confidential</p>




	<p><b>Bulk Ship Loader Replacement</b></p> <p>The Port of Long Beach replaced their aging Shiploader N° 1 at Pier G with a new, environmentally friendly slewing and luffing style shiploader with enclosed galleries and enhanced dust mitigation features. The new shiploader was supplied by a joint venture between two contractors, with the construction in Tianjin, China.</p> <p>The port retained McKay International Engineers and Liftech Consultants to serve as full service project managers and to supplement the port's internal project management, inspection, and engineering teams and the Port's engineering consultants.</p> <p>McKay retained third-party inspectors to oversee the fabrication and QC/QA activities in Tianjin to troubleshoot and coordinate with the engineering teams. The new Shiploader N° 1 immediately met its target throughput and fugitive dust requirements and continues to be in reliable commercial operation at Pier G.</p> <p>Client: Port of Long Beach Owner: Port of Long Beach</p>
	<p><b>Bulk Ship Loader – Replacement</b></p> <p>In 2022, The Port of Long Beach commenced a multi-year project to replace their aging Shiploader N° 2 at Pier G, adjacent to their replaced Shiploader N° 1.</p> <p>The port retained McKay International Engineers and Liftech Consultants to provide design review services. The design requires a shuttling boom instead of a conventional slewing-luffing arrangement, necessitating a one-off design. In addition, modern requirements for wharf and seismic design and enhanced dust mitigation present additional constraints that will require unique solutions to deliver the desired result.</p> <p>McKay and Liftech look forward to contributing to the project's success.</p> <p>Client: Moffatt &amp; Nichol Owner: Port of Long Beach</p>

Photograph	Description
	<p>Left Coast Lifter            American Bridge/Fluor            San Francisco, California</p> <p>American Bridge/Fluor made a joint venture to develop and construct the new East span of the San Francisco Bay Bridge. The construction plan presented required innovation of a crane specifically for the bridge project.</p> <p>McKay provided consulting services throughout the design and construction phases of the project. Extensive simulation and analysis was performed on the mechanical and reeving systems, including unique issues such as translation of the boom, planetary gearing for multiple hoist reduction ratios, transport stowage, and an advanced position winch arrangement.</p> <p>Owner: American Bridge/Fluor</p>
	<p>Railroad Rail Bundle Lift            SSA Marine            Stockton, California</p> <p>SSA Stockton is the unloading site of long railroad rail being imported to the United States over the next ten plus years. In preparation for the initial unloading, SSA required a custom-built triple spreader assembly that is attached to the synchronized shipboard cranes.</p> <p>SSA retained McKay to provide the complete spreader design, drawings for manufacture, and operating and maintenance documentation. The primary considerations in the design are its necessity to be stowed in identical, modular sections when not in use. The connection to the five-rail bundle is via twelve rail handlers that are actuated with an onboard pneumatic system.</p> <p>Owner: SSA Marine</p>



Photograph	Description
	<p>Revolving Derrick Crawler Crane            Bigge Power Constructors            San Leandro, California</p> <p>Bigge, with the incentive to provide a solution for construction of new nuclear power plant sites in the United States, began development of the 125D, the world's largest capacity rotating crane. With its load capacity and its unique features, Bigge revolutionized new plant construction.</p> <p>McKay partnered with Bigge to support the design phase, developing solutions for the unique functionality requirements. McKay developed designs for the gantry wheel load equalization, crane leveling to compensate for varying foundation conditions, and bearing design for the vertical tension column. McKay used 3D to develop the assembly instructions.</p> <p>Owner: Bigge Power Constructors</p>
	<p>Bridge Crane</p> <p>The owner sought to ensure the reliability of the operation by evaluating potential areas for reliability improvement on their Goliath crane.</p> <p>The McKay/Liftech team was retained to conduct a comprehensive study to identify structural, mechanical, and electrical issues that could arise if not properly addressed. The team provided technical solutions to be implemented, as well as probable costs and schedules for the rehabilitation issues identified. Additionally, the team developed an analysis of the potential to purchase a substitute crane and authored the technical specifications for the procurement.</p> <p>Owner: Confidential</p>



Photograph	Description
	<p>Condition Assessment</p> <p>The owner retired a 350 Ton hammerhead crane from service in the 1970s. In pursuit of a plan for the sustainability of the crane into the future, McKay and Liftech were retained to evaluate the crane for two options: mothballing or demolition.</p> <p>McKay provided a mothballing condition assessment and recommendations to properly decommission the primary and auxiliary crane mechanical components. In addition, McKay provided a life-cycle analysis of maintaining the crane versus immediate demolition.</p> <p>Owner: Confidential</p>

Photograph	Description
	<p>RTG Procurement            Massachusetts Port Authority            Boston, Massachusetts</p> <p>Massport developed a capital improvements program to overhaul their yard equipment, including retrofitting existing RTGs with newer diesel generator sets and procuring additional RTGs. Konecranes was awarded the supply contract for the new cranes.</p> <p>Liftech and McKay were retained to provide design review services, as well as provide manufacturing and commissioning support. McKay reviewed the mechanical and electrical submittals. McKay's commissioning services included conducting a generator set load test and endurance test.</p> <p>Owner: Massport            Client: Massport</p>
	<p>IYC and ASC Procurement            Long Beach Container Terminal            Long Beach, California</p> <p>LBCT debuted an unprecedented level of crane automation in the United States. The intermodal operations are handled by five ZPMC fully automated IYC cranes that span eight rails and feature rotating trolleys with articulating gantries. The container yard will be comprised of 74 automated stacking cranes (ASCs).</p> <p>McKay was retained by LBCT through Moffatt &amp; Nichol to provide the technical specifications and design review services for the STS, ASC, and IYC crane procurements. McKay was proud to be involved with this ground-breaking project.</p> <p>Owner: Long Beach Container Terminal            Client: Moffatt &amp; Nichol</p>

Photograph	Description
(Photograph not available)	<p>ARMG Condition Assessment Veracruz, Tuxpan, Mexico</p> <p>Tuxpan has a fleet of automated RMGs that required a condition assessment. Tuxpan retained McKay and Liftech to develop a procedure to assesses the static and dynamic condition of the equipment. McKay worked closely with Tuxpan to offer a detailed testing procedure that met their needs.</p> <p>Owner: Tuxpan</p>
	<p>RTG Workshop APM Terminals, Los Angeles, California</p> <p>APM Terminals wanted to improve the efficiency of performing maintenance tasks on their fleet of RTGs. They retained McKay and Liftech to provide a customized workshop solution that would accommodate all of the access points and service locations throughout the equipment.</p> <p>McKay and Liftech conducted a site visit to gather requirements, discuss the terminal's needs in detail, and issue drawings for APMT's use. The project is ongoing.</p> <p>Owner: APM Terminals</p>
	<p>Automated RMGs APM Terminals Rotterdam, The Netherlands</p> <p>APMT contracted with Künz for an order of 26 fully automated RMG cranes, straddling nine containers wide. APMT's team retained the McKay/Liftech team to provide design review services to ensure the cranes meet their requirements.</p> <p>McKay reviewed the design to the contract specifications, using McKay's calculation package to independently evaluate the drive trains and reeving of the hoist, trolley, and gantry main motions. Additionally, McKay reviewed Künz's submittal drawings and calculations to verify component sizing for adequate sizing, maintainability, and identifying where improvements could be made to minimize the total cost of ownership for APMT.</p> <p>Owner: APM Terminals</p>

Photograph	Description
	<p>RMG Procurement  MFT and SFT  Melbourne &amp; Sydney, Australia</p> <p>The intermodal terminals at Melbourne &amp; Sydney purchased 5 to 7 RMG stacking cranes for their existing yards. The reality of uneven topography became a particularly important consideration for the design of the RMGs.</p> <p>McKay was retained through Halcrow to provide engineering services for the procurement. McKay conducted a thorough study of the rail alignment and its effect on crane design, ensuring that the bidders' designs will accommodate the rail variations. We also provided technical evaluations of each bidder's crane proposal and conducted the design review. McKay ensured that the client was provided the best cranes for their operations.</p> <p>Owner: MFT and SFT</p>
	<p>ASC Procurement  SSA-MIT  Manzanillo, Mexico</p> <p>To expand their growing operations on the Atlantic side of Central America, SSA-MIT invested in nine all-electric and fully-automated ASCs. The ASCs have a cantilevered runway extending beyond both legs to have maximum cargo handling flexibility.</p> <p>McKay performed the mechanical design review, focusing on optimizing the rigid hoist reeving system and improving the reliability of the headblock micro-motion systems for greater accuracy and durability. McKay reviewed the manufacturer's drawings and calculations, as well as performing an independent set of calculations to verify the capabilities of the cranes.</p> <p>Owner: SSA-MIT</p>