

OFFICIAL PROGRAM STANDARDS NOTICE (OPSN)

Issued: August 9th, 2024

Program: TOWER CRANE OPERATOR

To: SkilledTradesBC Training Providers
 Articulation Chair
 System Liaison Person
 Youth Train in Trades School Districts
 BC Association for Crane Safety

Subject: Tower Crane Operator (2024) Program Outline, Program Profile, and Standardized Level Exams (SLEs) Update

OPSN No.: OPSN 2024 018

Effective Date: October 1, 2024

Summary of Change: Please be advised that a new Program Outline and Program Profile have been posted to the SkilledTradesBC website. Changes were made to program content, the credentialing model, technical training hours, and work-based training hours.

Both levels of the revised **Tower Crane Operator (2024)** program will be implemented on October 1, 2024.

Revised Level 1 and Level 2 SLEs will be implemented on October 1, 2024. SLEs for this program require a minimum score of 70% to pass and are **not** blended with Technical Training marks.

Details: The Tower Crane Operator Program Review was conducted in April 2024 to align BC’s Tower Crane Operator Program Outline to the 2023 Red Seal Occupational Standard (RSOS). The review process resulted in revised content to meet the current industry standard.

There are no changes to the trade name or number of training levels. There are some changes to the work-based training hours, technical training hours, and sequencing of technical training.

Tower Crane Operator	Changes in BC?	What will it be?
Trade name	No	Tower Crane Operator
Total hours (work-based training and technical training hours)	No	3,000 hours (+35 hours of work-based training, -35 hours of technical training)
Training levels	No	2 Levels
Training sequence	Yes	Some changes

Details (continued): Changes to the Tower Crane Operator program in BC are as follows:

	Tower Crane Operator (2017)	Tower Crane Operator (2024)
Level 1 Technical Training	210 hours (6 weeks)	175 hours (5 weeks)
Level 2 Technical Training	140 hours (4 weeks)	140 hours (4 weeks) <i>(no change)</i>
Work-based Training Hours	2,650 hours	2,685 hours
Minimum rigging hours	A minimum of 500 hours of documented rigging time	A minimum of 1,000 hours of documented rigging time
Minimum operating hours	A minimum of 500 hours operating tower crane equipment with a minimum mast height of 90 ft.	A minimum of 1,000 hours operating tower crane equipment with a minimum mast height of 90 ft.

- An updated Occupational Analysis Chart (OAC) and changes to competency distribution across program levels. For details, see the attached Competency Migration chart.
- An updated credentialing model that captures the **removal** of Mobile Crane Operator and Tower Crane Operator Level 1 Common Core and the **introduction** of Tower Crane Operator Level 1.
 - At industry request, the Common Core Level 1 model has been removed.
- Revised SLEs that align to the updated program.
 - The Level 1 and Level 2 SLEs **do not** require the use of a code book. Please refer to the SkilledTradesBC [website](#) to find exam support material for the **Tower Crane Operator Level 1 and 2 SLEs** including:
 - Exam Breakdowns, which show the number of questions on the exams per General Area of Competency (GAC) and Competency
 - Acronym lists and formula sheets, which will be included in the exam reference booklet that accompanies the exams, will soon be posted

Rationale:

At the request of industry, the Canadian Council of Directors of Apprenticeship's (CCDA) Harmonization Initiative was launched in Fall of 2013 and endorsed by the Forum of Labour Market Ministers (FLMM) in 2014. The goal of Harmonization is to substantively align apprenticeship systems across Canada by making apprenticeship training requirements more consistent in the Red Seal trades.

In consultation with stakeholders, the CCDA identified four Harmonization priorities: trade name, total training hours (in-school + work-based training), number of training levels, and the sequencing of training content.

Attachments: Tower Crane Operator Competency Migration (below)

This attachment provides details of the revisions made to the Tower Crane Operator Program Outline during the review process.

For more information contact: Program Standards
email: programstandards@skilledtradesbc.ca

cc: All Staff

Key

2017.L = 2017 Tower Crane Operator Level (1, 2)
 2024.L = 2024 Tower Crane Operator Level (1, 2)
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Summary - Competency Migration

The BC Occupational Analysis Chart (OAC) was aligned to the content of the 2023 Red Seal Occupational Standard (RSOS). Therefore, **competencies have been renamed and restructured**. This chart shows the finalized competency distribution for the Tower Crane Operator (2024) program. It summarizes the major changes to the competencies from the 2017 program to the 2024 program. For details, see the charts below.

2024 TOWER CRANE OPERATOR LEVEL 1 (2024.L1)		2024 TOWER CRANE OPERATOR LEVEL 2 (2024.L2)	
Line A	USE COMMON OCCUPATIONAL SKILLS	Line A	USE COMMON OCCUPATIONAL SKILLS
	A1 Comply with regulations, policies, and manufacturers' manuals		
	A2 Maintain a safe working environment		
	A3 Follow emergency procedures		
	A4 Awareness of energized systems		
Only new content in 2024.L2	A5 Practice effective worksite communications	New from 2023 RSOS	A5 Practice effective worksite communications
Line B	DEFINE CRANE TYPES AND TERMINOLOGY	Line B	DEFINE CRANE TYPES AND TERMINOLOGY
	B1 Define crane types		
	B2 Use crane terminology		
Line C	DEFINE SYSTEMS AND COMPONENTS	Line C	DEFINE SYSTEMS AND COMPONENTS
	C1 Describe structural, mechanical, and electrical system components and functions		
	C2 Describe support equipment components and functions		
	C3 Describe track (rail) travel components and functions		
	C4 Describe cab, safety, and access components and functions		
Line D	USE RIGGING	Line D	USE RIGGING
	D1 Identify types of slings and rigging hardware		
	D2 Inspect slings and rigging hardware		
	D3 Maintain and store slings and rigging hardware		
	D4 Perform rigging	2017.L1→2024.L1/L2	D4 Perform rigging
Line E	PERFORM HOISTING CALCULATIONS	Line E	PERFORM HOISTING CALCULATIONS
	E1 Determine load weights	2017.L1→2024.L1/L2	E1 Determine load weights

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2024 TOWER CRANE OPERATOR LEVEL 1 (2024.L1)		2024 TOWER CRANE OPERATOR LEVEL 2 (2024.L2)	
2024.L1/L2←2017.L2	E2 Use a crane capacity chart		E2 Use a crane capacity chart
Line F	PERFORM CRANE INSPECTION AND MAINTENANCE	Line F	PERFORM CRANE INSPECTION AND MAINTENANCE
	F1 Use tools for basic crane maintenance		
	F2 Perform basic crane maintenance		
	F3 Identify pre-operational inspection components		
2024.L1/L2←2017.L2	F4 Perform pre-operational inspection		F4 Perform pre-operational inspection
	F5 Inspect, maintain, and use crane wire rope		
Line G	PLAN A LIFT	Line G	PLAN A LIFT
	G1 Describe ordinary lift planning		
			G2 Perform engineered and critical lift plan
Line H	PERFORM COMMON CRANE OPERATIONS	Line H	PERFORM COMMON CRANE OPERATIONS
2024.L1←2017.L2	H1 Interpret operator manuals		
2024.L1/L2←2017.L2	H2 Perform tower crane operations and hoisting techniques		H2 Perform tower crane operations and hoisting techniques
New from 2023 RSOS	H3 Monitor conditions		
	H4 Secure crane		
Line I	DESCRIBE TOWER CRANE ASSEMBLY, DISASSEMBLY, RECONFIGURATION, AND TRANSPORT	Line I	DESCRIBE TOWER CRANE ASSEMBLY, DISASSEMBLY, RECONFIGURATION, AND TRANSPORT
			I1 Describe assembly and raising procedures for a bottom climbing tower crane
			I2 Describe assembly and raising procedures for a top climbing tower crane
		New from 2023 RSOS	I3 Describe crane reconfiguration
		New from 2023 RSOS	I4 Describe assembly, disassembly, and transport of a self-erect tower crane
Line J	USE SPECIALIZED OPERATIONS	Line J	USE SPECIALIZED OPERATIONS
2024.L1/L2←2017.L2	J1 Operate with a suspended work platform		J1 Operate with a suspended work platform
			J2 Perform engineered lifts
			J3 Perform multiple crane lifts

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Details – Competency Migration

This chart shows where content from the 2017 Tower Crane Operator program (2017.L) moved to in the 2024 Tower Crane Operator program (2024.L) and includes details of content that was moved or split across levels.

2017 TOWER CRANE OPERATOR LEVEL 1 (2017.L1) to 2024 TOWER CRANE OPERATOR LEVEL 1 (2024.L1)

2017 TCO LEVEL 1 (2017.L1)	2024 TCO LEVEL 1 (2024.L1)	MIGRATION	DETAILS
Line A – SAFETY	Line A – USE COMMON OCCUPATIONAL SKILLS		
A1 – Comply with regulations, policies, and manufacturers’ manuals	A1 – Comply with regulations, policies, and manufacturers’ manuals		
A2 – Maintain a safe working environment	A2 – Maintain a safe working environment		
A3 – Follow emergency procedures	A3 – Follow emergency procedures		
A4 – Be aware of power line hazards	A4 – Awareness of energized systems		
A5 – Practice effective worksite communications	A5 – Practice effective worksite communications		
Line B – TYPES AND TERMINOLOGY	Line B – DEFINE CRANE TYPES AND TERMINOLOGY		
B1 – Define types of cranes	B1 – Define crane types		MCO-related content removed.
B2 – Define crane classifications	B1 – Define crane types		MCO-related content removed.
B3 – Use crane terminology	B2 – Use crane terminology		MCO-related content removed.
Line C – SYSTEMS AND COMPONENTS	Line C – DEFINE SYSTEMS AND COMPONENTS Line F – PERFORM CRANE INSPECTION AND MAINTENANCE		
C1 – Describe the components and functions of carrier systems, outrigger systems, and turntable assemblies	C1 – Describe structural, mechanical, and electrical system components and functions		MCO-related content removed.
	C2 – Describe support equipment components and functions		MCO-related content removed.
	F3 – Identify pre-operational inspection components		MCO-related content removed.
C2 – Describe the components and functions of power plants and drive systems	C1 – Describe structural, mechanical, and electrical system components and functions		MCO-related content removed.
	F3 – Identify pre-operational inspection components		MCO-related content removed.
C3 – Describe the components and functions of pneumatic systems, hydraulic systems, and electrical systems	C1 – Describe structural, mechanical, and electrical system components and functions		MCO-related content removed.

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2017 TCO LEVEL 1 (2017.L1)	2024 TCO LEVEL 1 (2024.L1)	MIGRATION	DETAILS
	F3 - Identify pre-operational inspection components		MCO-related content removed.
C4 - Describe the components and functions of steering systems and braking systems	C1 - Describe structural, mechanical, and electrical system components and functions		MCO-related content removed.
	C3 - Describe track (rail) travel components and functions		MCO-related content removed.
	F3 - Identify pre-operational inspection components		MCO-related content removed.
C5 - Describe the components and functions of hoisting systems and attachments	C1 - Describe structural, mechanical, and electrical system components and functions		MCO-related content removed.
	F3 - Identify pre-operational inspection components		MCO-related content removed.
C6 - Describe the functions of safety components, devices, and aids	C4 - Describe cab, safety, and access components and functions		MCO-related content removed.
	F3 - Identify pre-operational inspection components		MCO-related content removed.
Line D - WIRE ROPE AND RIGGING	Line D - USE RIGGING Line F - PERFORM CRANE INSPECTION AND MAINTENANCE		
D1 - Specify types of wire rope and their uses	F5 - Inspect, maintain, and use crane wire rope		
D2 - Follow wire rope installation procedures	F5 - Inspect, maintain, and use crane wire rope		
D3 - Inspect wire rope, slings, and rigging hardware	D2 - Inspect slings and rigging hardware		
	F5 - Inspect, maintain, and use crane wire rope		
D4 - Specify types of slings, rigging hardware, and their uses	D1 - Identify types of slings and rigging hardware		
D5 - Use rigging techniques	D4 - Perform rigging	2017.L1→2024.L1/L2	Content for Level 1 remains the same with advanced content added to Level 2 2024.L1 = Rig a basic load. 2024.L2 = Calculate and install rigging on a non-symmetrical load.
D6 - Maintain and store wire rope, slings, and rigging hardware	D3 - Maintain and store slings and rigging hardware		
	F5 - Inspect, maintain, and use crane wire rope		

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2017 TCO LEVEL 1 (2017.L1)	2024 TCO LEVEL 1 (2024.L1)	MIGRATION	DETAILS
Line E – LIFT PLANNING	Line D – USE RIGGING Line E – PERFORM HOISTING CALCULATIONS Line G – PLAN A LIFT		
E1 - Follow site assessment procedures	G1 - Describe ordinary lift planning		MCO-related site assessment and lift planning content removed. Site assessment content also appears in 2024.L2 G2 - Perform engineered and critical lift plan
E2 - Determine load weights	E1 - Determine load weights	2017.L1→2024.L1/L2	Content for Level 1 remains the same with advanced content added to Level 2 2024.L1 = Determine weight of basic-shaped load. 2024.L2 = Determine weight of load for a complex-shaped object.
E3 - Determine crane lifting capacity	E2 - Use a crane capacity chart	2024.L1/L2←2017.L2	MCO-related content removed. 2024.L1 E2 = gross capacity, net capacity 2024.L2 E2 = gross capacity, net capacity, maximum radius, and an achievement criteria assessing use
E4 - Determine rigging requirements	D4 - Perform rigging	2017.L1→2024.L1/L2	Content for Level 1 remains the same with advanced content added to Level 2 2024.L1 D4= Rig a basic load. 2024.L2 D4= Calculate and install rigging on a non-symmetrical load.
	G1 - Describe ordinary lift planning		
	G2 - Perform engineered and critical lift plan	2017.L1→2024.L2	
Line F – CRANE APPLICATIONS	Line F – PERFORM CRANE INSPECTION AND MAINTENANCE Line H – PERFORM COMMON CRANE OPERATIONS		
F1 - Interpret operator manuals	H1 - Interpret operator manuals	2024.L1←2017.L2	MCO-related content removed. 2017.L2 J1- Interpret operating manuals for a hammerhead tower crane <i>and</i> 2017.L2 L1 - Interpret operating manuals for a luffing jib tower crane <i>combined to become 2024.L1 H1</i>
F2 - Perform a pre-operational inspection	F3 - Identify pre-operational inspection components		

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2017 TCO LEVEL 1 (2017.L1)	2024 TCO LEVEL 1 (2024.L1)	MIGRATION	DETAILS
	F4 - Perform pre-operational inspection	2024.L1/L2←2017.L2	MCO-related content removed. 2017.L2 J2- Perform a pre-operational inspection for a hammerhead tower crane and 2017.L2 L2 - Perform a pre-operational inspection for a luffing jib tower crane combined to become 2024.L1/L2 F4 2024.L1 F4 = basic pre-operational inspection 2024.L2 F4 = complete pre-operational inspection
F3 - Perform a pre-operational setup	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	Pre-operational setup merged with start-up procedures and function test content in H2.
F4 - Demonstrate hoisting techniques	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
F5 - Operate a 20-80 tonne telescoping boom crane		Removed	MCO-related content removed.
F6 - Operate a tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
F7 - Leave a crane unattended	H4 - Secure crane	2024.L1←2017.L2	MCO-related content removed. 2017.L2 J6- Leave a hammerhead tower crane unattended and 2017.L2 L6 - Leave a luffing jib tower crane unattended combined to become 2024.L1 H4
Line G - TRANSPORTING A CRANE			
G1 - Define Commercial Transport Regulations		Removed	MCO-related content removed.
G2 - Prepare a crane for travel		Removed	MCO-related content removed.
G3 - Prepare a crane for transport		Removed	MCO-related content removed. TCO content in 2024.L2 I4
G4 - Assemble and disassemble a crane		Removed	MCO-related content removed. TCO content in 2024.L2 I1, I2, I4
Line H - CRANE MAINTENANCE	LINE F - PERFORM CRANE INSPECTION AND MAINTENANCE		
H1 - Use tools for basic crane maintenance	F1 - Use tools for basic crane maintenance		
H2 - Perform basic crane maintenance	F2 - Perform basic crane maintenance		

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2017 TCO LEVEL 1 (2017.L1)	2024 TCO LEVEL 1 (2024.L1)	MIGRATION	DETAILS
	NEW COMPETENCIES ADDED TO LEVEL 1		
	Line H - PERFORM COMMON CRANE OPERATIONS		
	H3 - Monitor conditions	New from 2023 RSOS	Monitor weather, site, equipment performance, and structural and support component conditions added
	Line J - USE SPECIALIZED OPERATIONS		
	J1 - Operate with a suspended work platform	2024.L1/L2←2017.L2	2023 RSOS sequencing states to include operating with a suspended work platform in Level 1. Theory content added to Level 1 with practical content and achievement criteria in Level 2.

**This is the end of the 2017 TCO Level 1 to 2024 TCO Level 1 comparative.
 The 2017 TCO Level 2 to 2024 TCO Level 2 comparative begins on the next page.**

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2017 MOBILE CRANE OPERATOR LEVEL 2 (2017.L2) to 2024 MOBILE CRANE OPERATOR LEVEL 2 (2024.L2)

2017 TCO LEVEL 2 (2017.L2)	2024 TCO LEVEL 2 (2024.L2)	MIGRATION	DETAILS
Line I – LIFT PLANNING – HAMMERHEAD TOWER CRANE	Line E – PERFORM HOISTING CALCULATIONS Line G – PLAN A LIFT		
I1 - Conduct a site assessment for a hammerhead tower crane	G2 - Perform engineered and critical lift plan	2024.L1/L2←2017.L2	Site assessment content also appears in 2024.L1 G1 – Describe ordinary lift planning
I2 - Use a crane capacity chart for a hammerhead tower crane	E2 - Use a crane capacity chart	2024.L1/L2←2017.L2	2024.L1 E2 = gross capacity, net capacity 2024.L2 E2 = gross capacity, net capacity, maximum radius, and an achievement criteria assessing use
Line J – HAMMERHEAD TOWER CRANE OPERATIONS	Line F – PERFORM CRANE INSPECTION AND MAINTENANCE Line H – PERFORM COMMON CRANE OPERATIONS		
J1 - Interpret operating manuals for a hammerhead tower crane		2024.L1←2017.L2	Combined with 2024.L1 H1 - Interpret operating manuals
J2 - Perform a pre-operational inspection for a hammerhead tower crane	F4 - Perform a pre-operational inspection	2024.L1/L2←2017.L2	2024.L1 F4 = basic pre-operational inspection 2024.L2 F4 = complete pre-operational inspection
J3 - Perform a pre-operational setup for a hammerhead tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	Pre-operational setup merged with start-up procedures and function test content in 2024.L1/L2 H2.
J4 - Perform hoisting techniques for a hammerhead tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
J5 - Operate a hammerhead tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
J6 - Leave a hammerhead tower crane unattended		2024.L1←2017.L2	2024.L1 H4 - Secure crane
Line K– LIFT PLANNING – LUFFING JIB TOWER CRANE	Line E – PERFORM HOISTING CALCULATIONS Line G – PLAN A LIFT		
K1 - Conduct a site assessment for a luffing jib tower crane	G2 - Perform engineered and critical lift plan	2024.L1/L2←2017.L2	Site assessment content also appears in 2024.L1 G1 – Describe ordinary lift planning
K2 - Use a crane capacity chart for a luffing jib tower crane	E2 - Use a crane capacity chart	2024.L1/L2←2017.L2	2024.L1 E2 = gross capacity, net capacity 2024.L2 E2 = gross capacity, net capacity, maximum radius, and an achievement criteria assessing use

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2017 TCO LEVEL 2 (2017.L2)	2024 TCO LEVEL 2 (2024.L2)	MIGRATION	DETAILS
Line L – LUFFING JIB TOWER CRANE OPERATIONS	Line F – PERFORM CRANE INSPECTION AND MAINTENANCE Line H – PERFORM COMMON CRANE OPERATIONS		
L1 - Interpret operating manuals for a luffing jib tower crane		2024.L1←2017.L2	Combined with 2024.L1 H1 - Interpret operating manuals
L2 - Perform a pre-operational inspection for a luffing jib tower crane	F4 - Perform a pre-operational inspection	2024.L1/L2←2017.L2	2024.L1 F4 = basic pre-operational inspection 2024.L2 F4 = complete pre-operational inspection
L3 - Perform a pre-operational setup for a luffing jib tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	Pre-operational setup merged with start-up procedures and function test content in 2024.L1/L2 H2.
L4 - Perform hoisting techniques for a luffing jib tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
L5 - Operate a luffing jib tower crane	H2 - Perform tower crane operations and hoisting techniques	2024.L1/L2←2017.L2	2024.L1 H2 = operate a crane without a load 2024.L2 H2 = operate a crane with a load
L6 - Leave a luffing jib tower crane unattended		2024.L1←2017.L2	2024.L1 H4 - Secure crane
Line M – SPECIALIZED OPERATIONS	Line J – USE SPECIALIZED OPERATIONS		
M1 - Operate a suspended work platform	J1 - Operate with a suspended work platform	2024.L1/L2←2017.L2	
M2 - Perform engineered lifts	J2 - Perform engineered lifts		
M3 - Perform multiple crane lifts	J3 - Perform multiple crane lifts		
Line N – CLIMBING CRANES	Line I – DESCRIBE TOWER CRANE ASSEMBLY, DISASSEMBLY, RECONFIGURATION, AND TRANSPORT		
N1 - Follow assembly and raising procedures for a bottom climbing tower crane	I1 - Describe assembly and raising procedures for a bottom climbing tower crane		
N2 - Follow assembly and raising procedures for a top climbing tower crane	I2 - Describe assembly and raising procedures for a top climbing tower crane		

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2017 TCO LEVEL 2 (2017.L2)	2024 TCO LEVEL 2 (2024.L2)	MIGRATION	DETAILS
	NEW COMPETENCIES ADDED TO LEVEL 2		
	Line A - USE COMMON OCCUPATIONAL SKILLS		
	A5 - Practice effective worksite communications	New from 2023 RSOS	2024.L2 = Demonstrate effective mentoring techniques and communication practices Note: Level 1 content did not move
	Line E - PERFORM HOISTING CALCULATIONS		
	E1 - Determine load weights	2017.L1→2024.L1/L2	Content for Level 1 remains the same with advanced content added to Level 2 2024.L1 = Determine weight of basic-shaped load. 2024.L2 = Determine weight of load for a complex-shaped object.
	Line I - DESCRIBE TOWER CRANE ASSEMBLY, DISASSEMBLY, RECONFIGURATION, AND TRANSPORT		
	I3 - Describe crane reconfiguration	New from 2023 RSOS	
	I4 - Describe assembly, disassembly, and transport of a self-erect tower crane	New from 2023 RSOS	

This is the end of the 2017 TCO Level 2 to 2024 TCO Level 2 comparative.