

Crane Operation Readiness Assessment

Construction Industry Institute

Research Team 434

Implementation Resource 434

July 2026

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Printed in the United States of America.

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Executive Summary

Cranes are among the most consequential pieces of equipment used on construction projects, enabling the placement of structural members, equipment, and materials that no other means of lifting can address. Their importance, however, comes with a correspondingly high level of risk, since crane operations have long been associated with some of the most severe accidents occurring in construction. Approximately 93 percent of these accidents are attributable to human intervention rather than equipment failure, meaning that the great majority of crane accidents are, in principle, preventable through human performance including proper planning, preparation, and verification before the lift begins. Yet the guidance for establishing such readiness is dispersed across multiple industry standards that were not designed to be used together, leaving project teams to assemble their own procedures and creating gaps in which important items are sometimes overlooked.

The Crane Operation Readiness Assessment (CORA), developed by CII Research Team 434 (RT-434), addresses this gap. CORA is a structured method and decision-support tool that organizes the readiness items required for a safe lift, the parties responsible for each, and the timing of verification into a single coordinated framework. It is delivered in three components: the CORA Spreadsheet, which demonstrates the full readiness assessment workflow; the CORA Reference Card, a palm-sized companion summarizing the readiness considerations across seven categories; and the CORA One-Pager, a single-page reference sheet for at-a-glance review.

This resource presents the role definitions and responsibility framework on which CORA is built, the structure of the CORA Spreadsheet and how its components work together, the procedure for conducting an assessment, and completed examples drawn from contrasting construction settings. Together, the chapters allow project teams to learn how to use CORA on projects and see the assessment applied to realistic lift scenarios.

CORA is structured to accommodate operations ranging from routine production lifts to complex critical lifts and is intended for use by all parties involved in a lift, from project owners and contractors to field-level personnel who carry out the work. By helping project teams align on what must be done, who must do it and when, the tool equips project teams to make readiness a verified outcome rather than an assumed condition.

Chapter 1. Introduction

What is CORA

The Crane Operation Readiness Assessment (CORA) is a structured method and accompanying decision-support tool developed by CII Research Team 434 (RT-434). This tool primarily aims to give project teams a reliable means of confirming that conditions required for a safe crane operation have been planned, prepared, and verified by the parties responsible for them. CORA is delivered in three components: the CORA Spreadsheet, which carries out the full readiness assessment workflow; the CORA One-Pager, a single-page reference sheet that lists all readiness checkpoints across the seven categories for at-a-glance review; and the CORA Reference Card, a palm-sized companion that summarizes readiness considerations focusing on readiness categories and checkpoints. The Spreadsheet serves as the primary tool for conducting the assessment, while the Reference Card and One-Pager act as supplementary aids designed to support field-level personnel in identifying and staying aware of the readiness considerations they are expected to address for safe lift executions. This document thus focuses primarily on the CORA Spreadsheet, with the Reference Card and One-Pager included as Appendix A and Appendix B.

A safe lift is the product of decisions and preparations made well before the lift starts. Smooth and thorough preparations depend heavily on clearly defined roles and responsibilities, as well as on completing all required readiness items. CORA is not intended to replace the existing standards, operator training, certifications, or guidelines that are already widely used in crane operations. Instead, it brings the readiness questions those standards imply into a single, integrated, and coordinated review. CORA pairs each readiness item with a clear assignment of responsibility, helping ensure that each readiness item is carried out correctly, supported by the right information and appropriate stakeholder involvement.

CORA has three primary goals. First, it seeks to make readiness visible. Using CORA enables the conversion of an otherwise tacit judgment into an explicit, item-by-item account that can be reviewed, challenged, and improved. Second, CORA seeks to make responsibility assignments unambiguous. To ensure clarity, RT-434 has identified who is responsible, accountable, consulted, and informed for each readiness item, adopting the RACI concept. Third, it seeks to make the readiness assessment adaptable, allowing the same approach to support a wide range of crane operation types and lift scenarios, encompassing routine production lifts to complex critical lifts.

In this way, CORA functions not just as a checklist, but as a shared way of working. It is a common reference that allows everyone involved in a lift, across organizations, roles, and phases, to confirm that the operation is ready to proceed safely.

Why did RT-434 develop CORA?

A review of historical crane accidents revealed that approximately 93 percent of crane accidents are attributable to human intervention, and only about 7 percent to mechanical or design failures (Wiethorn 2018). This distribution indicates that the dominant causes of crane accidents are fully preventable. Actions taken or omitted by a person can be controlled through proper procedures, communications, and verifications, unlike a latent equipment defect. In other words, the great majority of crane accidents are not failures of equipment but failures of crane operation preparation and safety planning. Therefore, RT-434 concluded that crane accidents are amenable to prevention through an appropriate readiness procedure applied before the lift begins.

A second observation points to a related challenge. While crane operators are typically well-trained on their own duties and well aware of applicable standards and guidelines, other parties involved in a lift, such as riggers, lift directors, and supervisors, often lack a clear understanding of the readiness actions they are expected to perform and how those actions relate to the responsibilities of others on the team. As a result, even when each party is committed to readiness, gaps and overlaps can persist simply because no one has a shared view of who is responsible for what.

A third observation concerns the state of existing guidance. The crane industry is supported by a substantial body of standards and references. The ASME B30 series, OSHA 1926.1400 (OSHA 2010), ASME P30.1 (ASME 2024b), and even some company-level guidelines for crane operations address many aspects of safe crane operation. However, guidelines are dispersed across multiple documents, are written at varying levels of specificity, and do not consistently align responsibilities with actions governed. Project teams are therefore left to assemble their own crane operation planning procedures from sources that were not designed to be used together, with the predictable result that important items, or the parties responsible for them, are sometimes overlooked.

These three observations together defined the opportunity RT-434 set out to address. The team's objectives were to harmonize relevant standards and guidelines into consistent guidance that can be used by all parties involved in a lift, to clearly define the

roles and responsibilities of each participating party, and to deliver a practical method and user-friendly tool for project teams to assess crane operation readiness.

Benefits and Beneficiaries of CORA

Benefits of CORA

CORA delivers four primary benefits to project teams.

1. Visibility of readiness progress

CORA presents all required readiness items in a single, consolidated view, indicating which tasks have been completed and which remain outstanding. The team can therefore see at any moment what is in place, what is missing, and where attention is needed before the operation begins.

2. Clarity of responsibility

By assigning each readiness item using a RACI structure, CORA clearly defines who is responsible, accountable, consulted, and informed. Each party can clearly see the actions they are expected to carry out, the information they need to provide or receive, and with whom they must coordinate.

3. A common basis for communication

Because all parties work from the same set of readiness items and RACI assignments, conversations among stakeholders, whether within a single organization or across multiple organizations involved in a lift, can take place based on a shared reference rather than individual interpretations. This reduces the misalignment that often arises when different parties describe the same situation in different terms.

4. A documented record of the readiness review

Once completed, CORA outputs, including the Checklist, Status Report, and Final Report, capture both the readiness items considered and the parties responsible for each. While CORA is not a regulatory document, these records serve as a useful internal reference. For example, they may be used to review how readiness was established for a particular lift or to revisit responsibility structures if questions arise after the operation.

Beneficiaries of CORA

These benefits extend to all parties involved in a lift, although their form varies depending on a person's role in the operation.

For field-level personnel, CORA serves as a guidance reference that clarifies, which readiness items each is expected to address based on role, and which items require coordination with others. This guidance is particularly valuable for roles whose responsibilities have historically been less clearly defined.

For safety and operations management, CORA serves as an integrated management tool to confirm that crane operations enter each phase in a verifiably ready state and to identify recurring weaknesses across multiple lifts.

For project owners and contracting parties, CORA provides a shared reference for the boundaries of responsibility among the multiple companies involved in a lift, supporting clearer coordination at the contractual and inter-organizational level.

Taken together, these benefits show that CORA is not an additional administrative burden, but a practical means of aligning all parties involved in a lift on what readiness requires and how it should be verified.

Chapter 2. Crane Operation Roles and Responsibilities

This chapter defines how CORA assigns responsibility for each readiness item. As discussed in Chapter 1, one of the recurring sources of inadequate readiness in crane operations is the lack of a shared understanding of who is responsible for what. To address this issue, RT-434 established two foundational elements:

- a standardized set of nine roles that represent the parties typically involved in a crane lift,
- the application of the RACI framework to assign each readiness item to the relevant roles.

The remainder of this chapter describes these two elements in turn.

The 9 roles defined in CORA

CORA defines nine roles that together represent the parties typically involved in a crane lift. Seven of these roles are adopted from ASME B30, which provides the most widely referenced role definitions in the U.S. crane industry. Two additional roles, Planner and Crane Manufacturer, were introduced during the development of CORA. The Planner role was added in recognition of the importance of pre-lift planning activities, which are not assigned to a single role but are essential to readiness in the sense addressed by CORA. The Crane Manufacturer role was added because the original design parameters, load capacities, and operational guidelines established by the manufacturer are critical to many readiness items, and identifying the manufacturer as a distinct role makes the source of this information explicit. The definitions used for the seven B30-derived roles closely follow the original definition provided in ASME B30.5 (ASME 2021). Each role is defined by the function it performs in the operation rather than by the organization or individual that fulfills it. The complete list of roles and their definitions is shown in Table 1.

It is worth noting the distinction between a role and a stakeholder. In CORA, a role refers to one of nine functional positions defined above, whereas a stakeholder refers to the actual company or individual that fulfills one or more of those roles on a particular lift. In practice, a single stakeholder may carry multiple roles. The mapping between the stakeholders included on a project and the nine CORA roles is therefore an important step in setting up an assessment and is discussed further in Chapter 4 as part of the Initial Input procedure.

Table 1. 9 Roles in CORA

Role	Definition
Crane Owner	Party who possesses custodial control of the crane by virtue of lease or ownership
Crane User	Party who arranges the crane's presence on a worksite and controls the crane's use on the site
Site Supervisor	Party who exercises supervisory control over the worksite on which a crane is being used and over the work that is being performed on that site
Lift Director	Party who directly oversees the work being performed by a crane and the associated rigging crew
Crane Operator	Party who directly controls the crane's functions
Rigger	Party who attaches the load to be lifted to the crane hook using slings, shackles, spreader beams, safety hoist rings, etc., and other gear as appropriate
Signal Person	Party responsible for directing crane movements through hand signals or voice/radio communication
Crane Manufacturer	Party responsible for the original design/fabrication/documentation of the crane and for establishing the rated load capacities, design limits, and operational guidelines
Planner	Party responsible for determining the method, sequence, and configuration of the lift, including crane selection, rigging plan, and risk assessment prior to the operation

RACI Definitions and Assignment Rules

CORA assigns responsibility at the level of individual readiness items using the RACI concept, a widely used framework in project management for clarifying roles in collaborative work. Under this concept, four distinct types of involvement are defined: Responsible, Accountable, Consulted, and Informed. The definitions used in RACI are summarized in Table 2.

Table 2. RACI concept as applied in CORA

Involvement Type	Definition
Responsible	The person or party who performs the tasks or carries out the work. They are directly responsible for completing the activity or ensuring that it is done correctly.
Accountable	The person or party who is ultimately answerable for the outcome of the task. This role ensures that responsibilities are assigned and the work meets required standards.
Consulted	The person who provides inputs, expertise, or technical advice before or during the task
Informed	The person or party who needs to be kept updated on progress, decisions, or outcomes.

For each readiness item, CORA identifies which of the nine roles fall into each of the four RACI categories. The assignment was developed by RT-434 following several rules that are generally applied when using the RACI concept. First, exactly one role is designated as Accountable for each readiness item, ensuring that ultimate answerability is never divided. Second, the Responsible, Consulted, and Informed positions may be assigned to multiple roles, since a single readiness item often draws on contributions from several parties. Third, a single role may hold both the Responsible and Accountable positions on the same readiness item when it both performs the work and is answerable for its outcome. Other combinations of positions are not used, as it would be inconsistent for a role performing or overseeing an action to also be the one consulted for input or merely informed of the result. Finally, not every position must be filled for every readiness item; for some items, certain positions are left empty when no role is meaningfully involved in that capacity.

Chapter 3. CORA Spreadsheet Architecture

This chapter describes how the CORA Spreadsheet is organized and how its parts work together to support a readiness assessment. While Chapter 2 explained the foundational elements of CORA, namely the nine roles and the RACI-based assignment of responsibility, this chapter shifts focus to how those elements are embedded in the tool.

The 3-Phase and 3-Level Structure

The readiness items in CORA are organized within a structure made up of three phases and three levels. Phases group readiness items by when they are addressed in the timeline of the operation, since the form of the question naturally changes depending on the point at which readiness is being assessed. Levels group readiness items by the depth at which they are examined, allowing the assessment to be conducted at the granularity most appropriate to the lift.

Phases of assessment

The three phases reflect the timeline along which crane operations unfold before a lift takes place: planning, mobilization, and pre-operation. Defining the phases in this way recognizes that readiness for a given subject takes a different form depending on when it is being assessed. The items appropriate to confirm during planning are not the same as items that should be confirmed in the days before the lift or on the day of the operation itself.

Planning covers medium- and long-term readiness, focusing on identifying risks in advance, assembling the information required to plan the lift, and establishing the procedures by which the lift will be performed safely.

Mobilization covers readiness in the days leading up to the lift, typically within one to two days before the operation. This phase concentrates on preparing the site, setting up the crane, and confirming that the conditions described in the lift plan are in place.

Pre-Operation covers the final readiness check performed on the day of the lift, immediately before operations begin. Like a pilot's pre-flight check, this phase is concerned not with re-examining each detail, but with confirming at a higher level that the conditions established earlier still hold and that any changes since mobilization have been accounted for.

Levels of assessment

The three assessment levels reflect a top-down hierarchy that allows readiness to be examined at different degrees of depth. Defining the levels in this way makes it possible to conduct an assessment at the granularity most appropriate to the lift, rather than forcing every lift through the same level of detail, as this tool targets routine production lifts to complex critical lifts.

Level 1 consists of seven functional categories under which all readiness items are organized: Crane, Rigging, Lift Planning, Personnel, Ground, Surroundings, and Load/Payload. Level 1 categories serve as a classification layer rather than a unit at which the assessment is performed. The assessment unfolds at the Level 2 or Level 3 layer below it.

Level 2 decomposes each Level 1 category into a smaller number of checkpoints, each representing a focused area of readiness within the category. For example, the Crane category contains checkpoints such as Capacity, Configuration/Setup, and Inspection/Testing/Maintenance. A Level 2 question verifies the overall readiness of the corresponding checkpoint, providing high-level confirmation without going into detailed particulars.

Level 3 decomposes each Level 2 checkpoint further into individual readiness items, each phrased as a specific, verifiable question about a requirement or action. A Level 3 question asks whether a particular condition has been met, or a particular task has been carried out, allowing readiness to be evaluated at a granular, actionable level.

Components of the CORA Tool

The CORA tool is organized around a workflow that carries the user from the entry of a project and crane operation information to a documented record of the completed assessment. Figure 1 shows the workflow as a whole. Four components, namely Initial Input, Checklist, Status Report, and Final Report, form the main steps of the workflow itself, while three further components: Coversheet, Instructions, and Knowledge Base, sit alongside it and support its use. The remainder of this section describes each component in the order in which it is encountered.

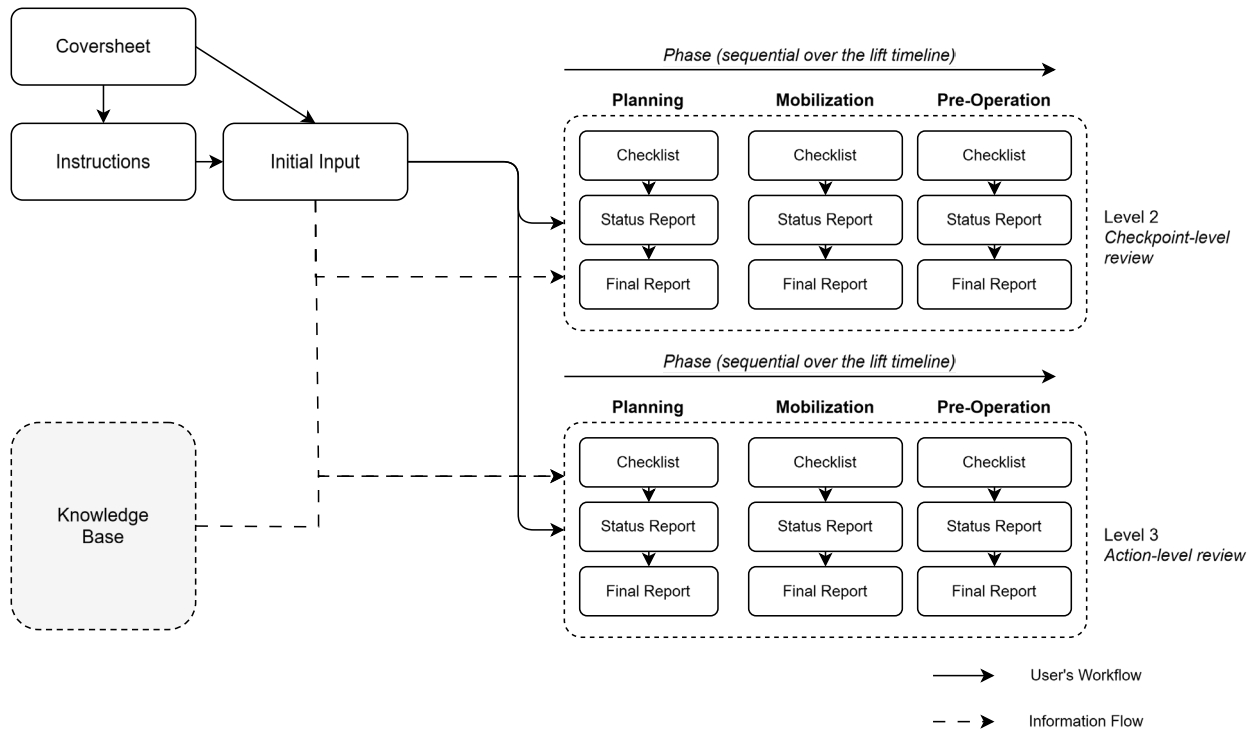


Figure 1. Workflow of CORA Spreadsheet

Coversheet and Instructions

The user begins at the Coversheet, which serves as the front page of the workbook and provides the main navigation. From the Coversheet, the user can open the Instructions sheet, move to the Initial Input sheet to begin a new assessment, or reset the checklist to clear the existing entries for a new assessment.

The Instructions sheet provides a written reference covering the key concepts and procedures for conducting a CORA assessment. Its contents include: the definitions of the three phases, the nine roles, and the RACI categories; an explanation of the level system; the assessment rules that govern how the tool is to be used; and step-by-step guidance on how to navigate through the CORA Spreadsheet. New users are encouraged to review the Instructions sheet before opening the Initial Input sheet for the first time.

Initial Input

The first step of the workflow takes place on the Initial Input sheet, where the user records the information that defines the scope of the assessment (Figure 2). Three categories of information are entered here. First, basic project and lift information is

recorded, identifying the project, the location, and the lift to which the assessment applies. Second, the user maps the stakeholders included on the project to the nine CORA roles introduced in Chapter 2. A role may be carried out by an entire company or by a specific individual within that company. Whether the role is assigned at the company level or to a specific individual is left to the user's judgment. Thus, the sheet provides two columns for this mapping, with the Company Name column always recording the responsible organization, and the Notes column recording the name of a specific individual when the role is assigned to a person rather than to a company. This mapping establishes which company or individual is assigned to each role for the lift in question. Third, the user selects the assessment level, choosing between Level 2 and Level 3 based on the complexity of the lift and the user's needs. The information entered on this sheet propagates throughout the rest of the workbook, so that subsequent components draw on a single, consistent record of the lift being assessed.

Save

Initial Input

Project Info		
Project Name	User Name (Company Name)	
The Austin Residential BLDG	Individual B	
Project Location	Area No.	
Austin, TX	EW-5	
Project No.	Lift No.	
ST-2025-AUSTIN	Lift-112 (Production Lift)	

Crane Operation Info		
Needed Roles	Company Name	Notes (Individual if needed)
Crane Owner	Crane Service Company	
Crane User	Mechanical Subcontractor	
Site Supervisor	General Contractor	Individual A
Lift Director	Mechanical Subcontractor	Individual B
Crane Operator	Crane Service Company	Individual C
Rigger	Mechanical Subcontractor	
Signal Person	Mechanical Subcontractor	Individual D
Crane Manufacturer	Crane Manufacturer Company	
Planner	Mechanical Subcontractor	Individual B

Assessment Level Selection		
Assessment Level	Level3	

Coversheet

Instructions

Planning Checklist

Planning Report

Mobilization Checklist

Mobilization Report

Pre-Operation Checklist

Pre-Operation Report

Figure 2. Sample Screenshot of the “Initial Input” Tab

Checklist

The second step of the workflow takes place on the Checklist sheets, where the readiness items are presented to the user for evaluation (Figure 3). The Spreadsheet provides a separate Checklist sheet for each combination of phase and level, so that the user works on the Planning, Mobilization, or Pre-Operation Checklist depending on where the lift currently stands in the timeline, and on the Level 2 or Level 3 version of that Checklist depending on the level chosen during the Initial Input.

The Level 2 Checklist presents readiness at the checkpoint level. Each row in the Level 2 Checklist corresponds to one Level 2 question and is accompanied by columns for Readiness Item Complete, N/A, and Notes. The Readiness Item Complete column is used to record whether the readiness item in question has been completed for the lift, the N/A column is used when the item does not apply to the lift, and the Notes column allows the user to record additional context concerning the readiness item, the response, or any related observation. RACI assignments are not shown on the Level 2 Checklist because Level 2 questions verify readiness at a more general level than the individual actions to which RACI assignments are tied in CORA. RACI in CORA is defined only at the action level represented by Level 3.

The Level 3 Checklist presents readiness at the action level. Each row corresponds to one Level 3 readiness question and includes the Readiness Item Complete, N/A, and Notes columns described above. In addition, four columns display the Responsible, Accountable, Consulted, and Informed parties for the readiness item, and an additional RACI assignment Complete column is provided for the user to record whether all RACI requirements associated with the item have been carried out. For example, a readiness item is checked only when the relevant parties have been consulted and informed in the manner indicated by the assignment. The RACI columns themselves are auto-populated when the Checklist is generated. Rather than showing the role-based assignments stored in the CORA Knowledge Base, the columns show the specific stakeholders for the lift in question, drawn from the mapping recorded on the Initial Input sheet.

The Checklist is the central working surface of the assessment, and most of the user's time on the tool is expected to be spent here.

Save

Level 3 Planning Checklist

Project Name	The Austin Residential BLDG	Crane Owner	Crane Service Company
Lift No.	ST-2025-AUSTIN	Crane User	Mechanical Subcontractor
Area No.	EW-5	Site Supervisor	Individual A (General Contractor)
Date	1/31/2026	Lift Director	Individual B (Mechanical Subcontractor)
		Crane Operator	Individual C (Crane Service Company)
		Rigger	Mechanical Subcontractor
		Signal Person	Individual D (Mechanical Subcontractor)
		Crane Manufacturer	Crane Manufacturer Company
		Planner	Individual B (Mechanical Subcontractor)

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Readiness Item Complete	RACI Assignment Complete	N/A	Notes
Crane	Capacity(C)	Has the load weight been determined?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor	Individual A(General Contractor)	☒	☒	☐	
Crane	Capacity(C)	Has the working radius for each lift been identified?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor, Individual A(General Contractor)		☒	☒	☐	
Crane	Capacity(C)	Has the net capacity for all planned configurations been calculated?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor	Individual A(General Contractor)	☒	☒	☐	
Crane	Access	Have access and logistics plans for crane and equipment been established?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual A(General Contractor)	Mechanical Subcontractor		☒	☒	☐	
Crane	Access	Has the crane footprint requirement been confirmed against site conditions?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor		☒	☒	☐	

Figure 3. Sample Screenshot of the “Checklist” Tab (Level 3, Planning phase shown)

Status Report

The third step of the workflow takes place on the Status Report tabs, which summarize the current state of the crane operation readiness (Figure 4). As with the Checklist, a separate Status Report is provided for each combination of phase and level, and each Status Report draws on the corresponding Checklist of the same phase and level.

The Level 2 Status Report contains three sections. The first section, Overall Status, reports how many readiness items have been marked as complete out of the total number of items in the Checklist for the phase, expressed as a ratio. When assessing the overall readiness status, items marked as N/A are not counted in the ratio, so that it reflects readiness only against items that apply to the lift in question. Depending on the ratio, it displays a status message: in a green cell if the assessment is complete with the message 'All readiness items are completed', or in a red cell if any item remains incomplete with the message 'Some readiness items are incomplete.' The second section, Incomplete Readiness Items, lists the items that have not yet been marked complete, allowing the user to see at a glance which areas remain to be addressed. The third section, Not Applicable Readiness Items, lists the items that have been marked as N/A for the lift in question, providing a transparent record of items that have been excluded from the assessment.

The Level 3 Status Report contains four sections. In addition to the three sections described above, it includes an Incomplete RACI Assignments section, which lists the readiness items for which the RACI Assignment Complete column has not yet been marked. The Overall Status section of the Level 3 Status Report also reports a separate RACI completion ratio alongside the readiness item completion ratio. The RACI completion ratio is provided for informational purposes only. The assessment's overall completion status is determined by the readiness item completion ratio alone.

The purpose of the Status Report is to give the user a consolidated view of where the readiness stands and to highlight the gaps that remain. Figure 4(a) shows a Status Report while some readiness items are still incomplete. If gaps are identified, the user addresses them and updates the Checklist accordingly. The Status Report is then updated once the corresponding entries have been revised. Once all readiness items have been marked complete (Figure 4(b)), the user proceeds from the Status Report to the Final Report through the Print Final Report button on the Status Report sheet. The button becomes available only when every readiness item is complete; if any readiness item remains incomplete, the button instead displays a message indicating that the assessment is not yet ready to be finalized.

Save

Level 3 Planning Status Report



Project Name	The Austin Residential BLDG
Lift No.	ST-2025-AUSTIN
Phase	Planning
Date	1/31/2026

1. Overall Status

Some readiness items are incomplete	Question Completion	RACI Completion
	48/50	47/50

2. Incomplete Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Crane	Inspection / Maintenance	Has a program for crane inspection, testing, and maintenance been established?	Crane Service Company, Mechanical Subcontractor, Individual A(General Contractor)	Individual B(Mechanical Subcontractor)		Individual A(General Contractor)	
Load & Payload	Special Consideration	Have the potential for shifting or deforming components of the load been evaluated?	Individual A(General Contractor)	Individual B(Mechanical Subcontractor)		Mechanical Subcontractor	

3. Incomplete RACI Assignments

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Crane	Inspection / Maintenance	Has a program for crane inspection, testing, and maintenance been established?	Crane Service Company, Mechanical Subcontractor, Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)		Individual A(General Contractor)	
Load & Payload	Special Consideration	Have the potential for shifting or deforming components of the load been evaluated?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)		Mechanical Subcontractor	
Load & Payload	Special Consideration	Has the need for special handling methods (e.g., fragile or pressurized loads) been addressed?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor		

4. Not Applicable Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Load & Payload	Special Consideration	Has the presence of hazardous or Immediately Dangerous to Life or Health (IDLH) materials within the load been identified?	Mechanical Subcontractor, Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)			

Checklist

Print
Final Report

Initial Input

(a)

Save

Level 3 Planning Status Report

Project Name	The Austin Residential BLDG						
Lift No.	ST-2025-AUSTIN						
Phase	Planning						
Date	1/31/2026						

1. Overall Status

All readiness items are completed	Question Completion	RACI Completion
	50/50	49/50

2. Incomplete Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
		ALL ITEMS COMPLETED. CHECK IF ANY PENDING RACI ACTIONS REQUIRED.					

3. Incomplete RACI Assignments

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Load & Payload	Special Consideration	Has the need for special handling methods (e.g., fragile or pressurized loads) been addressed?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor		

4. Not Applicable Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Load & Payload	Special Consideration	Has the presence of hazardous or Immediately Dangerous to Life or Health (IDLH) materials within the load been identified?	Mechanical Subcontractor, Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)			

Checklist

Print Final Report

Initial Input

(b)

Figure 4. Sample screenshot of “Status Report” tab: (a) with incomplete readiness items after all readiness items have been completed (Level 3, Planning phase shown)

Final Report

The fourth and final step of the workflow takes place on the CORA Final Report tab, which presents the completed assessment in a documented form (Figure 5). Each Final Report is generated from the corresponding Checklist of the same phase and level and serves as the documented record of the readiness assessment for the lift in question.

The Final Report opens with header information that identifies the lift, including the project and lift details entered on the Initial Input tab, together with the stakeholder mapping that records which company or individual carried out each of the nine CORA roles for the lift. The body of the Final Report lists every readiness item from the Checklist along with the final answer recorded for it, with the Readiness Item Complete response carried over as a YES or NO entry. Items that have been marked as N/A are

highlighted to indicate that they were not accounted for in the assessment, distinguishing them visually from items that received a substantive response.

Because the Final Report is generated only after the assessment has been confirmed complete on the Status Report, it provides the project team with a single, consolidated document that captures both the readiness items reviewed and the parties responsible for each. Once generated, the Final Report is fixed as a record of the completed assessment, and the user receives it in printable form rather than as a tab for further editing. This document can subsequently serve as the team's reference record for the readiness of the lift.

Level 3 Planning Final Report

Project Name	The Austin Residential BLDG
Lift No.	ST-2025-AUSTIN
Area No.	EW-5
Date	1/31/2026

Crane Owner	Crane Service Company
Crane User	Mechanical Subcontractor
Site Supervisor	General Contractor Individual A
Lift Director	Mechanical Subcontractor Individual B
Crane Operator	Crane Service Company Individual C
Rigger	Mechanical Subcontractor
Signal Person	Mechanical Subcontractor Individual D
Crane Manufacturer	Crane Manufacturer Company
Planner	Mechanical Subcontractor Individual B

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Readiness Item Complete	RACI Assignment Complete	N/A	Notes
Crane	Capacity(C)	Has the load weight been determined?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor	Individual A(General Contractor)	YES	YES	NO	
Crane	Capacity(C)	Has the working radius for each lift been identified?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor, Individual A(General Contractor)		YES	YES	NO	
Crane	Capacity(C)	Has the net capacity for all planned configurations been calculated?	Individual B(Mechanical Subcontractor)	Individual B(Mechanical Subcontractor)	Mechanical Subcontractor	Individual A(General Contractor)	YES	YES	NO	
Crane	Access	Have access and logistics plans for crane and equipment been established?	Individual A(General Contractor), Individual B(Mechanical Subcontractor)	Individual A(General Contractor)	Mechanical Subcontractor		YES	YES	NO	

Figure 5. Sample screenshot of “Final Report” tab (Level 3, Planning phase shown)

Knowledge Base

Underlying the workflow is the Knowledge Base, which serves as a backend reference that supports the assessment but is not accessed by the user. It contains the master list of readiness items together with the information that defines how each item is treated in the assessment, such as the phase to which it belongs and the RACI assignment by role. The Checklist draws on the Knowledge Base automatically when generated, populating each Checklist with the readiness items that correspond to the chosen phase and level. Although the Knowledge Base is not user-facing, it is included as part of the workbook so that the readiness items and their assignments remain inspectable.

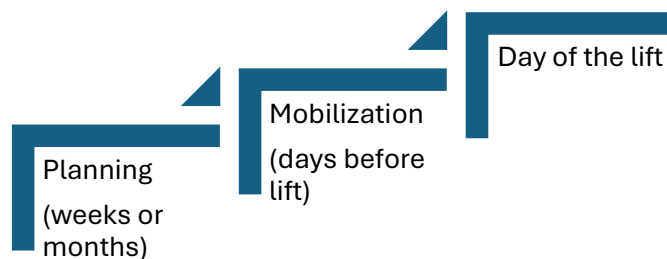
Chapter 4. Instructions for Assessing Crane Operation Readiness

This chapter explains how to use CORA for assessing crane operation readiness. Chapters 2 and 3 introduced the fundamental elements behind CORA and the architecture of the CORA Spreadsheet that embeds those elements. This chapter turns to the practical perspective of how a project team can use the tool to perform an assessment.

When to use CORA

CORA is intended to be applied broadly. The tool was designed to support all types of lifts, regardless of the type of crane, the type of operation being performed, or the complexity of the work. The tool's design accommodates routine production lifts and complex critical lifts alike.

The assessment is intended to be conducted for each lift. Because CORA distributes its readiness items across three phases, the assessment unfolds over multiple occasions rather than at a single point in time, with each Checklist addressed at the point in the timeline that corresponds to its phase. The most appropriate occasions for carrying out each Checklist are gatherings where the stakeholders relevant to that phase are already convened, such as planning meetings during the early stages of the lift, coordination meetings in the days before the lift, and the brief meeting held immediately before the operation begins.



Who should be involved in using CORA

CORA is most effective when used as a collaborative review involving the full set of stakeholders relevant to the lift. Bringing the parties together at the same time allows each readiness item to be confirmed by those with direct visibility into the work and allows the RACI assignments associated with each item to be verified in the same setting in which they are to be carried out. Beyond this practical purpose, the inclusion

of multiple stakeholders ensures that the readiness is considered from the different perspectives present on the lift, rather than being assessed and evaluated from any single party's vantage point.

Among the parties involved, the Lift Director is best positioned to lead the use of CORA. The Lift Director is the role most often designated as Accountable across the readiness items in the Knowledge Base and is responsible for directing the work performed by the crane and the rigging crew over the course of the operation. Leading the assessment is therefore a natural extension of the Lift Director's existing oversight role. The project owner may designate another party to take on this leading role if appropriate to the project's contractual or organizational arrangements.

Tailoring CORA to the lift

CORA is intended to apply to lifts of widely varying scope, complexity, and crane type. Rather than relying on separate procedures for each kind of lift, the tool accommodates this variation through several elements built into its design.

First, the users have the flexibility to choose between Level 2 and Level 3 assessments, mainly depending on the nature of the lift or the user's needs. For example, routine production lifts perform repetitive and low-risk operations. In this case, applying the full-action review of Level 3 would be unduly burdensome relative to the value it adds. In such cases, the user can rely on Level 2 to confirm readiness at the checkpoint level without committing to a more elaborate review than the lift warrants. For complex or critical lifts, where the consequences of the operation are significant and the work draws on many parties, the user can apply Level 3 to obtain the granular, action-level confirmation that such lifts require. The choice is made during the Initial Input setup and reflects the depth of attention the user judges appropriate for the lift.

Second, CORA accommodates the wide variation in how parties are organized across different lifts. A simple lift is typically carried out by a small number of stakeholders, each taking on multiple CORA roles where responsibilities span more than one function. A complex or critical lift, by contrast, naturally involves a larger number of stakeholders, with each role often carried by a distinct party. The CORA stakeholder-to-role mapping recorded on the Initial Input sheet is designed to capture either arrangement without requiring a separate role framework for each. The mapping further allows the user to record each role at either the company level or the individual level, depending on how specifically the responsibility is held on the project; in some cases, it is sufficient to know that an organization carries a given role, while in others the relevant accountability rests with a particular person within that organization. Furthermore, while crane standards typically specify responsibilities at the level of abstract roles, the readiness items in CORA are evaluated against the actual stakeholders carrying each role for the lift in

question, so that the readiness assignments are tied directly to the parties on the project rather than to generic role labels.

Third, the user can mark readiness items as N/A when they do not apply to the subject lift. The set of readiness items in CORA is designed to cover the full range of crane operations the tool may be applied to, and as a result, some items will be relevant only to certain types of lifts. Also, because lifts vary in their risks and conditions, certain items will be relevant to some lifts and not to others. For example, items concerning taglines may not apply when the lift does not require taglines to control the load. Marking such items as N/A keeps the Checklist focused on what is meaningful for the lift at hand.

Step-by-Step Procedures

This section follows the user's path through worksheet components from start to finish. The steps below set out, in order, the actions the user takes and the components that are touched at each point of the procedure.

1. Reset the workbook for a new assessment

Before starting a new assessment, the *Clear All* button on the Coversheet should be used to reset the workbook so that no entries from a previous assessment remain. From the Coversheet, the user can also access the Instructions tab for written guidance on the assessment or the Initial Input tab to begin the assessment.

2. Complete the Initial Input sheet

On the Initial Input sheet, all required fields in the Project Info and Crane Operation Info sections should be completed. The Project Info section captures information about the project and the lift being assessed. The Crane Operation Info section records the mapping between the stakeholders included on the project and the nine CORA roles. All entries should be reviewed for accuracy before proceeding, since the information entered here propagates throughout the rest of the workbook.

3. Select the assessment level

Using the Assessment Level Selection dropdown on the Initial Input tab, choose between Level 2 and Level 3. The previous section provides guidance on selecting the appropriate level for the subject lift.

4. Open the Checklist for the current phase

The buttons at the bottom of the Initial Input tab provide access to the Planning, Mobilization, and Pre-Operation Checklists and Status Reports. To begin the

assessment for a given phase, the user opens the Checklist that corresponds to the current phase of the lift. The Status Report for that phase becomes relevant later, once the Checklist has been completed.

5. Complete the Checklist

For each readiness item presented on the Checklist, the user records the appropriate response in the Readiness Item Complete, RACI Assignment Complete, N/A, and Notes columns. If needed, the user can also print the Checklist using the *Print Checklist* button on the tab and complete it by hand. The recorded responses are then entered back into the worksheet before the Status Report is generated. Once the Checklist is complete, the Report button on the Checklist sheet generates the Status Report for the phase and opens it.

6. Review the Status Report

The Status Report presents a status message along with the readiness ratio, the list of incomplete readiness items, the list of incomplete RACI assignments, and the list of items marked as not applicable. The user can identify which items are missing and require further action.

7. Address gaps and re-evaluate

Based on the Status Report, any incomplete readiness items or RACI assignments should be addressed. To update the corresponding entries on the Checklist, the user returns to the Checklist by clicking the *Checklist* button at the bottom of the Status Report. The *Report* button on the *Checklist* tab can then be used again to regenerate the Status Report and reflect the updates. This process continues until no items remain outstanding.

8. Generate the Final Report

Once all readiness items have been addressed, the *Print Final Report* button is used to generate the Final Report. The *Print Final Report* button functions only when no pending items remain on the Status Report. RT-434 recommends that stakeholders listed on the Final Report review the captured contents to verify the accuracy of the assessment.

9. Save the workbook

The *Save* button, located in the upper-right corner of each tab, should be used frequently to ensure that no information is lost during the course of the assessment. The default filename follows the format *CORA_[Project_name]_[Date].xlsm*, with the project name retrieved from the Initial Input tab.

Chapter 5. Assessment Examples

This chapter illustrates how CORA is applied in practice through four completed examples drawn from diverse lift usage scenarios. Whereas the preceding chapters describe what CORA is and how its components are used, the examples in this chapter show the tool in action, providing concrete reference cases that users can consult as they prepare to apply CORA on their own projects.

The four examples are hypothetical scenarios developed to represent four broad construction categories in which crane operations are commonly carried out: residential, commercial, highway and bridge, and industrial construction. Each example is set against a different combination of lift type and crane operation arrangement, so that the full set illustrates how CORA accommodates the range of conditions encountered across the industry. Together, the examples serve both to demonstrate the applicability of CORA across different lift settings and to offer users an implementation reference that more closely reflects the type of project they work on.

The mapping between project stakeholders and the nine CORA roles receives particular attention. The mapping recorded on the Initial Input tab is the most consequential input to the assessment yet may be confusing to users. The examples, therefore, show how the stakeholders included on the project are mapped to the nine roles, so users will have a clear reference when performing the mapping for their own lifts.

Each example follows the four-part structure, beginning with the lift scenario and the stakeholders involved, and proceeding through the Initial Input, the Checklist, and the resulting reports.

Example 1: Level 2 Assessment Example

Lift Scenario and Stakeholders

This example applies CORA to a hypothetical residential construction lift under the assumptions described below. In this scenario, the project is assumed to be a low-rise residential building where rooftop mechanical equipment is lifted into place using a mobile crane. The lift is assumed to be requested by the Mechanical Subcontractor as part of its installation work.

For purposes of this example, the crane is assumed to be provided by a Crane Service Company under a crane service arrangement. The Crane Service Company is assumed to retain custodial control of the crane and to provide the crane operator. The

Mechanical Subcontractor is assumed to arrange the crane's use for the rooftop equipment placement and to direct how the crane is used for that work. The General Contractor is assumed to maintain overall supervisory control of the project site.

At the time the assessment is conducted, it is assumed that the need for the lift has been identified and the lift is being planned, but detailed scheduling and final field preparations have not yet been completed. Based on these assumptions, the Planning Checklist is the appropriate phase for the assessment. Because the lift is assumed to be a routine production lift of moderate complexity and short duration, the assessment is conducted at Level 2.

Completing the Initial Input

Based on the assumptions described in the scenario, the Initial Input sheet is completed by entering the project and lift information and mapping the participating stakeholders to the nine CORA roles. The mapping shown in this example represents one plausible assignment for the assumed arrangement and should be revised if the actual project uses a different crane provider, operator arrangement, rigging organization, or site supervision structure.

In this example, the Crane Service Company is mapped to the Crane Owner role because it is assumed to possess custodial control of the crane by virtue of ownership or lease. Because the Crane Service Company is also assumed to provide the operator, the Crane Operator role is mapped to Individual C, who is affiliated with the Crane Service Company.

The Mechanical Subcontractor is mapped to the Crane User role because it is assumed to arrange the crane's use for its work and to control how the crane is used for the placement of the rooftop mechanical equipment. The Lift Director role is assigned to Individual B from the Mechanical Subcontractor, who is assumed to directly oversee the lifting activity and coordinate the work performed by the crane and rigging crew. Under this assumed arrangement, Individual B also serves as the Planner because the Mechanical Subcontractor is assumed to determine the method, sequence, and configuration of the lift.

The General Contractor is mapped to the Site Supervisor role because it is assumed to exercise overall supervisory control over the project site. Individual A is identified in the Notes column as the person exercising this site-level supervisory authority on behalf of the General Contractor. The Rigger and Signal Person roles are mapped to the Mechanical Subcontractor because, in this assumed scenario, the Mechanical Subcontractor provides the personnel responsible for rigging the load and

communicating crane movements. Individual D is identified as the Signal Person where an individual-level assignment is appropriate. The Crane Manufacturer role is mapped to the Crane Manufacturer as the party responsible for the crane's original design, rated capacity information, and operating requirements.

Once the Initial Input sheet is completed, the stakeholder-to-role mapping is carried forward into the Checklist and reports. The project team should review this mapping carefully before proceeding, since the assignments shown in the Checklist depend on the stakeholders entered in the Initial Input sheet. Completed initial input with the stakeholder mapping is shown in Figure 6.

Save

Initial Input

Project Info

Project Name	User Name (Company Name)
The Austin Residential BLDG	Individual B
Project Location	Area No.
Austin, TX	EW-5
Project No.	Lift No.
ST-2025-AUSTIN	Lift-112 (Production Lift)

Crane Operation Info

Needed Roles	Company Name	Notes (Individual if needed)
Crane Owner	Crane Service Company	
Crane User	Mechanical Subcontractor	
Site Supervisor	General Contractor	Individual A
Lift Director	Mechanical Subcontractor	Individual B
Crane Operator	Crane Service Company	Individual C
Rigger	Mechanical Subcontractor	
Signal Person	Mechanical Subcontractor	Individual D
Crane Manufacturer	Crane Manufacturer Company	
Planner	Mechanical Subcontractor	Individual B

Assessment Level Selection

Assessment Level	Level2	
------------------	--------	--

Coversheet

Instructions

Planning Checklist

Planning Report

Mobilization Checklist

Mobilization Report

Pre-Operation Checklist

Pre-Operation Report

Figure 6. Screenshot of the completed Initial Input

Conducting the Checklist assessment

The Planning Checklist for Level 2 presents twenty-six readiness items grouped under the seven Level 1 categories. Each item is phrased as a high-level question that verifies overall readiness at the checkpoint level, so the user is expected to confirm readiness for each item rather than to evaluate individual actions. Because the Level 2 Checklist does not extend to action-level assignments, the RACI columns introduced in the Level 3 Checklist do not appear, and the user records only whether each item is complete, whether it is not applicable, and any context worth noting.

One situation encountered in this scenario illustrates how the Notes column can be used to clarify a response that might otherwise be misread. For lifts of routine character

such as this one, certified riggers may not be required even though the qualifications, training, and certifications readiness item still applies. In such cases, the user marks the item as complete and uses the Notes column to record the basis for the response, for example, by noting that the rigging crew operates under standard residential rigging practice. Figure 7 shows a portion of the completed Checklist with this entry.

Save

Level 2 Planning Checklist

Project Name	The Austin Residential BLDG	Crane Owner	Crane Service Company
Lift No.	ST-2025-AUSTIN	Crane User	Mechanical Subcontractor
Area No.	EW-5	Site Supervisor	Individual A (General Contractor)
Date	5/14/2026	Lift Director	Individual B (Mechanical Subcontractor)
		Crane Operator	Individual C (Crane Service Company)
		Rigger	Mechanical Subcontractor
		Signal Person	Individual D (Mechanical Subcontractor)
		Crane Manufacturer	Crane Manufacturer Company
		Planner	Individual B (Mechanical Subcontractor)

Level 1	Level 2 Questions	Readiness Item Complete	N/A	Notes
Crane	Has the crane's capacity been evaluated?	☒	☐	
Crane	Has the access plan for the crane been defined?	☒	☐	
Crane	Has the appropriate assembly/disassembly plan been defined?	☒	☐	
Personnel	Are the roles and responsibilities for all personnel involved in load handling, maintenance, and oversight clearly defined and documented?	☒	☐	
Personnel	Have the required qualifications, training, and certifications been identified?	☒	☐	Standard residential rigging practice applies; certified rigger qualification not required
Ground	Does the ground meet stability and grade requirements?	☒	☐	

Figure 7. Screenshot of the completed Checklist

Reviewing the Reports

Once the Checklist is complete, the user generates the Status Report for the Planning phase. Because all twenty-six readiness items on the Level 2 Planning Checklist have been marked as complete in this scenario, the Overall Status section displays the green message, *"All readiness items are completed"* alongside the full readiness ratio (Figure 8). The *Print Final Report* button becomes available at this point, and the user generates the Final Report (Figure 9). Figure 9 is an edited compilation of the Final Report, focusing on critical parts.

Save

Level 2 Planning Status Report



Project Name	The Austin Residential BLDG
Lift No.	ST-2025-AUSTIN
Phase	Planning
Date	5/14/2026

1. Overall Status

All readiness items are completed	25/25
-----------------------------------	-------

2. Incomplete Readiness Items

Level 1	Level 2	Notes
	ALL ITEMS COMPLETED	

3. Not Applicable Readiness Items

Level 1	Level 2	Notes
	NO N/A ITEMS	

Figure 8. Screenshot of the completed Status Report

The Final Report consolidates the outcome of the assessment into a single record. Alongside the project information, the stakeholder mapping, and the recorded responses to each readiness item, the Notes recorded during the Checklist also appear in the Final Report. In this scenario, the explanation entered for the qualifications, training, and certifications item noting that certified riggers are not required for the lift, is carried forward and remains visible on the documented record. The Final Report, therefore, brings together all information generated through the assessment in one place, where it can be reviewed and retained as needed.

Level 2 Planning Final Report

Project Name	The Austin Residential BLDG	Crane Owner	Crane Service Company
Lift No.	ST-2025-AUSTIN	Crane User	Mechanical Subcontractor
Area No.	EW-5	Site Supervisor	Individual A (General Contractor)
Date	5/14/2026	Lift Director	Individual B (Mechanical Subcontractor)
		Crane Operator	Individual C (Crane Service Company)
		Rigger	Mechanical Subcontractor
		Signal Person	Individual D (Mechanical Subcontractor)
		Crane Manufacturer	Crane Manufacturer Company
		Planner	Individual B (Mechanical Subcontractor)

Level 1	Level 2 Questions	Readiness Item Complete	N/A	Notes
Crane	Has the crane's capacity been evaluated?	YES	NO	
Crane	Has the access plan for the crane been defined?	YES	NO	
Personnel	Are the roles and responsibilities for all personnel involved in load handling, maintenance, and oversight clearly defined and documented?	YES	NO	
Personnel	Have the required qualifications, training, and certifications been identified?	YES	NO	Standard residential rigging practice applies; certified rigger qualification not required
Ground	Does the ground meet stability and grade requirements?	YES	NO	

Figure 9. Screenshot of the completed Final Report

Example 2: Level 3 Assessment Example

Lift Scenario and Stakeholders

This scenario applies CORA to a hypothetical commercial construction lift under the assumptions described below. In this scenario, the project is assumed to involve the construction of a six-story mid-rise commercial building where a tower crane is used to support shell installation activities. A single tower crane is assumed to be leased or arranged by the General Contractor for use on the project and made available to different subcontractors according to their lifting needs.

For purposes of this example, the General Contractor is assumed to control the tower crane arrangement on the project and to assign the crane for use by subcontractors as needed. Therefore, the General Contractor is taking custodial control of the crane. Under this assumed arrangement, the General Contractor is mapped to the Crane Owner role. The tower crane is shared among multiple subcontractors, but the Structural Subcontractor is assumed to be the party requesting and directing the specific shell installation lift being assessed. Therefore, the Structural Subcontractor is assigned the Crane User role for this lift.

At the time the assessment is conducted, it is assumed that the tower crane has already been erected and is available on site. The lift planning has been completed, but execution of the shell installation lift has not yet begun. Based on these assumptions, the Mobilization Checklist is the appropriate phase for the assessment. Because this is

assumed to be the Structural Subcontractor's first use of the shared tower crane on the project, and because the operation involves multiple parties and site constraints, the assessment is conducted at Level 3 so that readiness can be verified at the action level. If the actual project uses a different crane lease structure, crane assignment process, operator arrangement, subcontractor structure, or site control arrangement, the project team should adjust the assessment phase, assessment level, and role mapping accordingly.

Completing the Initial Input

Based on the assumptions described in the scenario, the Initial Input sheet is completed by entering the project and lift information and mapping the participating stakeholders to the nine CORA roles. The mapping shown in this example represents one plausible assignment for the assumed arrangement and should be revised if the actual project uses a different crane procurement arrangement, operator arrangement, subcontractor structure, or site supervision arrangement.

In this example, the General Contractor is mapped to the Crane Owner role because it is assumed to have leased the tower crane for use on the project and to coordinate its assignment among subcontractors, having custodial control of the crane throughout the project. The General Contractor is also mapped to the Site Supervisor role because it is assumed to exercise overall supervisory control over the worksite, including coordination of site access, work areas, and other activities occurring around the lift. Individual A is identified in the Notes column as the person exercising site-level supervisory authority on behalf of the General Contractor.

The Structural Subcontractor is mapped to the Crane User role because it is assumed to request and direct the tower crane's use for the specific shell installation lift being assessed. Although other subcontractors may become Crane Users for their own lifts at other times, the Structural Subcontractor is the Crane User for this assessment because it is the party controlling how the crane is used for this particular lifting activity.

The Lift Director role is assigned to Individual B from the Structural Subcontractor, who is assumed to directly oversee the lifting activity and coordinate the work performed by the crane and rigging crew. The Crane Operator role is assigned to Individual C because, under this assumed arrangement, the operator is assigned to perform the lift using the tower crane for the Structural Subcontractor's work. The Rigger and Signal Person roles are also mapped to the Structural Subcontractor because the subcontractor is assumed to provide the personnel responsible for attaching the load and communicating crane movements.

The Planner role is assigned to Individual E from the Structural Subcontractor because the Structural Subcontractor is assumed to develop the lift plan and determine the method, sequence, and configuration of the lift based on its shell installation needs. The Crane Manufacturer role is mapped to the crane manufacturer as the party responsible for the crane's original design, rated capacity information, technical specifications, and operating requirements.

Once the Initial Input sheet is completed, the stakeholder-to-role mapping is carried forward into the Checklist and reports. Because the tower crane is shared among multiple subcontractors in this example, the project team should confirm that the mapping reflects the specific lift being assessed. A different subcontractor using the same tower crane for a different lift may become the Crane User for that separate assessment.

Save

Initial Input

Project Info		
Project Name	User Name (Company Name)	
UT Commercial	Individual B	
Project Location	Area No.	
Austin, TX	NE-1	
Project No.	Lift No.	
CO-2024-AUSTIN	Lift-001 (Production Lift)	

Crane Operation Info		
Needed Roles	Company Name	Notes (Individual if needed)
Crane Owner	Crane Service Company	
Crane User	Structural Subcontractor	
Site Supervisor	General Contractor	Individual A
Lift Director	Structural Subcontractor	Individual B
Crane Operator	Structural Subcontractor	Individual C
Rigger	Structural Subcontractor	
Signal Person	Structural Subcontractor	Individual D
Crane Manufacturer	Crane Manufacturer Company	
Planner	General Contractor	Individual E

Assessment Level Selection		
Assessment Level	Level3	

Coversheet

Instructions

Planning Checklist

Planning Report

Mobilization Checklist

Mobilization Report

Pre-Operation Checklist

Pre-Operation Report

Figure 10. Screenshot of the completed Initial Input

Conducting the Checklist assessment

For the purposes of this scenario, it is assumed that the coordination of crane operations with other ongoing jobsite activities and the establishment of hazards have not yet been verified or discussed at the time of the assessment, and exclusion zones around the work area have been completed but not communicated to the signal person. Under this assumption, the corresponding readiness item under Lift Planning is recorded as incomplete on the Checklist, and the item under Surroundings is recorded as Readiness Item Complete but not RACI Assignment Complete on the Checklist (Figure 11). The remaining readiness items are recorded as complete.

Save

Level 3 Mobilization Checklist

Project Name	UT Commercial	Crane Owner	Crane Service Company
Lift No.	CO-2024-AUSTIN	Crane Lessor	Structural Subcontractor
Area No.	NE-1	Site Supervisor	Individual A (General Contractor)
Date	5/14/2026	Lift Director	Individual B (Structural Subcontractor)
		Crane Operator	Individual C (Structural Subcontractor)
		Rigger	Structural Subcontractor
		Signal Person	Individual D (Structural Subcontractor)
		Crane Manufacturer/Planner	Crane Manufacturer Company
			Individual D (General Contractor)

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Readiness Item Complete	RACI Assignment Complete	N/A	Notes
Crane	Capacity[C]	Has the crane capacity been verified as adequate for the planned lift configuration and all manufacturer-specified limitations?	Structural Subcontractor, Individual B(Structural Subcontractor), Individual C(Structural Subcontractor)	Individual B(Structural Subcontractor)	Crane Service Company	Individual D(Structural Subcontractor)	☒	☒	☐	
Lift Planning	Communication / Coordination	Has the primary communication method or system (e.g., radio, hand signals) been confirmed and verified with all personnel involved?	Individual A(General Contractor), Individual B(Structural Subcontractor), Individual D(Structural Subcontractor)	Individual B(Structural Subcontractor)	Structural Subcontractor, Individual C(Structural Subcontractor)		☒	☒	☐	
Lift Planning	Communication / Coordination	Have crane operations been coordinated with other ongoing jobsite activities to avoid conflicts?	Individual A(General Contractor), Individual B(Structural Subcontractor)	Individual A(General Contractor)		Structural Subcontractor, Individual C(Structural Subcontractor), Individual D(Structural Subcontractor)	☐	☐	☐	
Surroundings	Weather / Visibility	Have weather condition limits (e.g., wind speed, storms, temperature, visibility) been incorporated into site procedures?	Individual A(General Contractor), Individual B(Structural Subcontractor), Individual C(Structural Subcontractor)	Individual B(Structural Subcontractor)	Structural Subcontractor		☒	☒	☐	
Surroundings	Access	Have hazard/exclusion zones been established, clearly marked, and communicated around the crane's operating area?	Individual A(General Contractor), Individual B(Structural Subcontractor)	Individual A(General Contractor)	Structural Subcontractor, Individual C(Structural Subcontractor)	Individual D(Structural Subcontractor)	☒	☐	☐	

Figure 11. Screenshot of the completed Checklist

Reviewing the Reports

When the Status Report is generated, the Overall Status section reflects the two incomplete items, displaying the red message, *"Some readiness items are incomplete"* alongside the corresponding readiness ratio. One outstanding item appears in the Incomplete Readiness Items section, and two items appear in the Incomplete RACI Items section (Figure 12).

Save

Level 3 Mobilization Status Report



Project Name	UT Commercial
Lift No.	CO-2024-AUSTIN
Phase	Mobilization
Date	5/14/2026

1. Overall Status

Some readiness items are incomplete	Question Completion	RACI Completion
	55/56	54/56

2. Incomplete Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Lift Planning	Communication / Coordination	Have crane operations been coordinated with other ongoing jobsite activities to avoid conflicts?	Individual A(General Contractor), Individual B(Structural Subcontractor)	Individual A(General Contractor)		Structural Subcontractor, Individual C(Structural Subcontractor), Individual D(Structural Subcontractor)	

3. Incomplete RACI Assignments

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Y/N
Lift Planning	Communication / Coordination	Have crane operations been coordinated with other ongoing jobsite activities to avoid conflicts?	Individual A(General Contractor), Individual B(Structural Subcontractor)	Individual A(General Contractor)		Structural Subcontractor, Individual C(Structural Subcontractor), Individual D(Structural Subcontractor)	
Surroundings	Access	Have hazard/exclusion zones been established, clearly marked, and communicated around the crane's operating area?	Individual A(General Contractor), Individual B(Structural Subcontractor)	Individual A(General Contractor)	Structural Subcontractor, Individual C(Structural Subcontractor)	Individual D(Structural Subcontractor)	

4. Not Applicable Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Load & Payload	Special Consideration	Have hazardous or fluid contents within the load been secured?	Structural Subcontractor, Individual B(Structural Subcontractor)	Individual B(Structural Subcontractor)	Individual C(Structural Subcontractor)		

(a)

Save

Level 3 Mobilization Status Report

Project Name	UT Commercial
Lift No.	CO-2024-AUSTIN
Phase	Mobilization
Date	5/14/2026

1. Overall Status

All readiness items are completed	Question Completion 56/56	RACI Completion 56/56
-----------------------------------	------------------------------	--------------------------

2. Incomplete Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
		ALL ITEMS COMPLETED. CHECK IF ANY PENDING RACI ACTIONS REQUIRED.					

3. Incomplete RACI Assignments

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	V/N
		ALL RACI ACTIONS COMPLETED					

4. Not Applicable Readiness Items

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Notes
Load & Payload	Special Consideration	Have hazardous or fluid contents within the load been secured?	Structural Subcontractor, Individual B(Structural Subcontractor)	Individual B(Structural Subcontractor)	Individual C(Structural Subcontractor)		

(b)

**Figure 12. Sample screenshot of the completed Status Report:
(a) Incomplete items remaining (b) all items completed**

If, in response, the relevant parties coordinate the lifting schedule with the other subcontractors and establish the hazard and exclusion zones around the work area, the corresponding readiness items can then be marked as complete on the Checklist. The Status Report is regenerated to reflect these updates, the *"All readiness items are completed"* message is displayed alongside a full readiness ratio, and the user proceeds to generate the Final Report as the documented record of readiness for the Mobilization phase of this lift (Figure 13). Figure 13 shows a screenshot of part of the report.

Level 3 Mobilization Final Report

Project Name	UT Commercial
Lift No.	CO-2024-AUSTIN
Area No.	NE-1
Date	5/14/2026

Crane Owner	Crane Service Company
Crane User	Structural Subcontractor
Site Supervisor	Individual A (General Contractor)
Lift Director	Individual B (Structural Subcontractor)
Crane Operator	Individual C (Structural Subcontractor)
Rigger	Structural Subcontractor
Signal Person	Individual D (Structural Subcontractor)
Crane Manufacturer	Crane Manufacturer Company
Planner	Individual D (General Contractor)

Level 1	Level 2	Level 3	Responsible	Accountable	Consulted	Informed	Readiness Item Complete	RACI Assignment Complete	N/A	Notes
Crane	Capacity(C)	Has the crane capacity been verified as adequate for the planned lift configuration and all manufacturer-specified limitations?	Structural Subcontractor, Individual B(Structural Subcontractor), Individual C(Structural Subcontractor)	Individual B(Structural Subcontractor)	Crane Service Company	Individual D(Structural Subcontractor)	YES	YES	NO	
Crane	Capacity(C)	Are applicable load rating charts and diagrams consistent with the assembled configuration?	Individual B(Structural Subcontractor), Individual C(Structural Subcontractor)	Individual B(Structural Subcontractor)	Crane Service Company, Structural Subcontractor	Individual A(General Contractor)	YES	YES	NO	
Crane	Assembly / Disassembly	Has the crane been assembled in accordance with the manufacturer's instructions and the lift plan?	Structural Subcontractor, Individual B(Structural Subcontractor), Individual C(Structural Subcontractor)	Individual B(Structural Subcontractor)	Crane Service Company, Crane Manufacturer Company	Individual A(General Contractor)	YES	YES	NO	
Load & Payload	Special Consideration	Have protruding parts or accessories that could interfere with rigging been removed or secured?	Structural Subcontractor, Individual B(Structural Subcontractor)	Individual B(Structural Subcontractor)	Individual C(Structural Subcontractor)		YES	YES	NO	
Load & Payload	Special Consideration	Have hazardous or fluid contents within the load been secured?	Structural Subcontractor, Individual B(Structural Subcontractor)	Individual B(Structural Subcontractor)	Individual C(Structural Subcontractor)		NO	NO	YES	

Figure 13. Screenshot of the completed Final Report

Chapter 6. Conclusions

This implementation resource has presented CORA, a structured method and decision-support tool developed by RT-434 to bring roles, responsibility, and timing of readiness into a single coordinated framework for crane operations on construction projects. The materials documented across the preceding chapters, the role definitions, the RACI assignments, the three-phase workflow embedded in the Spreadsheet, and the supporting Reference Card and One-Pager, together represent the team's response to a long-standing shortcoming in the way crane operation readiness has been established on construction projects. While the conditions for a safe lift are widely understood and addressed across industry standards and guidelines, project teams have historically had to assemble their own readiness procedures from sources that were not designed to be used together and that do not consistently align readiness items with the parties responsible for them.

RT-434 set out to answer whether the relevant readiness items, the parties responsible for each, and the timing at which they should be verified could be brought into a single, coordinated frame, and whether such a frame could be made practical enough to be used by project teams without imposing an excessive burden. The CORA Spreadsheet, together with the Reference Card and One-Pager represent the team's answer to this question. By pairing each readiness item with an explicit RACI assignment, organizing

the items across three phases, and embedding both into a workflow that produces a documented record of the assessment, CORA gives project teams a single point at which the readiness of a crane operation can be jointly established, communicated, coordinated, and confirmed.

However, CORA does not replace the standards, certifications, or training that already govern crane operations, nor does it eliminate the judgment required of the parties involved in a lift. Its value depends on the active and candid participation of those parties, and on the support of the organizations within which they work. As emphasized at the outset of this resource, the great majority of crane accidents stem from human intervention rather than equipment failure and are therefore amenable to prevention through proper preparation and verification before the lift begins. RT-434 hopes that CORA will contribute meaningfully to this prevention by giving project teams a practical means of confirming readiness and responsibility before each crane operation.

References

ASME. 2024. *ASME B30.10 Hooks*. ASME.

ASME. 2021. *ASME B30.5 Mobile and Locomotive Cranes*. ASME.

ASME. 2024b. *ASME P30.1 Planning for Load Handling Activities*. ASME.

OSHA. 2010. *29 CFR Part 1926 Subpart CC Cranes and Derricks in Construction*. U.S. Department of Labor.

Wiethorn, Jim. 2018. "An Analytical Study of Critical Factors of Lift Planning to Improve Crane Safety Based on Forensic Causation of Crane Accidents."

Appendices

Appendix A—CORA Reference Card

**CRANE OPERATION
READINESS ASSESSMENT**

LEVEL 1 CATEGORIES

CRANE	
RIGGING	
LIFT PLANNING	
PERSONNEL	
GROUND CONDITIONS	
SURROUNDINGS	
PAYLOAD	

BEFORE YOU LIFT: CHECK THESE SEVEN!





H GROUP
CRANE • SAFETY • INNOVATION

11, LLC • 11 STRAND TECHNOLOGIES, INC. • WETWORK-RISK SYSTEMS, LLC



LEVEL 2 CHECKPOINTS

CATEGORIES	CHECKPOINTS
CRANE	- Crane Capacity - Crane Compliance - Configuration & Setup - Assembly & Disassembly - Crane Inspection & Maintenance - Safety & Readiness - Crane Access
RIGGING	- Rigging Capacity - Arrangement - Rigging Compliance - Rigging Inspection & Maintenance
LIFT PLANNING	- Plan - Permits & Approvals - Roles & Responsibilities - Communication & Coordination
PERSONNEL	- Certification & Qualification - Training
GROUND	- Ground Preparation - Matting - Excavation & Underground
SURROUNDINGS	- Obstructions - Area Access - Weather & Visibility - Powerlines
PAYLOAD	- Weight & CoG - Load Characteristics - Lifting Attachments - Landing Area

**IF NOT READY:
STOP THE LIFT & CALL SUPERVISOR!**

Appendix B—CORA One-Pager

Crane Operation Readiness Assessment Categories and Checkpoints



PROJECT / SITE SUPERVISOR	LIFT DIRECTOR	CRANE OPERATOR	DATE
---------------------------	---------------	----------------	------

1. CRANE	
Capacity	Crane capacity should be evaluated, verified, and confirmed using load charts that match the assembled configuration
Access	The access plan for the crane should be defined, communicated, and cleared
Assembly / Disassembly	The crane should be assembled in accordance with the manufacturer's instructions and the approved lift plan
Configuration / Setup	The crane configuration should be planned, set up, and verified against the lift plan and load charts
Compliance	The crane should comply with all applicable standards and requirements
Inspection / Testing / Maintenance	An inspection, testing, and maintenance program should be established, and all functional controls should operate without deficiency.
Safety & Readiness	All safety/weather/emergency devices should be present, functionally tested, and supported by required documentation
2. RIGGING	
Capacity	Rigging should have sufficient capacity, and the setup should be verified for load control
Arrangement	The rigging arrangement should be developed, verified against the lift plan, and tag lines should be in place as required
Compliance	Rigging equipment should comply with all applicable standards and requirements
Inspection / Testing / Maintenance	An inspection and maintenance program should be established, and all rigging should be inspected, certified, and maintained in proper working condition
3. LIFT PLANNING	
Plan	The lift plan should address operational risks and emergency contingencies, with pre-lift reviews and emergency protocols synchronized with the team
Roles & Responsibilities	Personnel responsibilities should be assigned, communicated, and confirmed, and all personnel should be briefed on the plan, assignments, and hazards
Permits / Approvals	All required permits, authorizations, and approvals should be obtained, verified as valid, and available on site
Communication / Coordination	Communication protocols and coordination plans with other site activities should be defined, verified, and discussed.
4. PERSONNEL	
Certification / Qualification	Roles and responsibilities should be defined, and qualified personnel (operator, supervisor, director, riggers) should be designated, present, and fit for duty
Training	Required qualifications, training, and certifications should be identified and verified as current for all personnel
5. GROUND	
Ground Preparation	The ground should meet stability, grade, and bearing-capacity requirements and be confirmed suitable for operations
Excavation / Underground	Subsurface conditions, excavations, voids, and underground utilities should be identified and addressed
Matting / Cribbing	Matting and cribbing should be evaluated, verified as adequate, and properly placed where required
6. SURROUNDINGS	
Obstructions	The work area should be checked, hazards addressed, and a 360° inspection should confirm that swing and load paths are clear
Weather / Visibility	Environmental limits (weather/visibility) should be defined and confirmed as acceptable for the operational window
Access	A site control plan with hazard and exclusion zones should be established, clearly marked, and enforced to restrict unauthorized access
Powerlines	Electrical hazards and proximity risks to energized conductors or power lines should be identified, addressed, and controlled
7. LOAD & PAYLOAD	
Weight & CoG	The load's weight, center of gravity, and stability during lifting, tilting, and rotation should be determined and verified
Lifting Attachments	Load attachment points should be defined, clearly marked, accessible, and properly engaged
Load Characteristics	Internal hazards should be identified, and the load should be verified against the plan, with all shifting, protruding, or hazardous components secured

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IR-434